NATURAL REPRODUCTION OF LAKE TROUT IN LAKE HURON.

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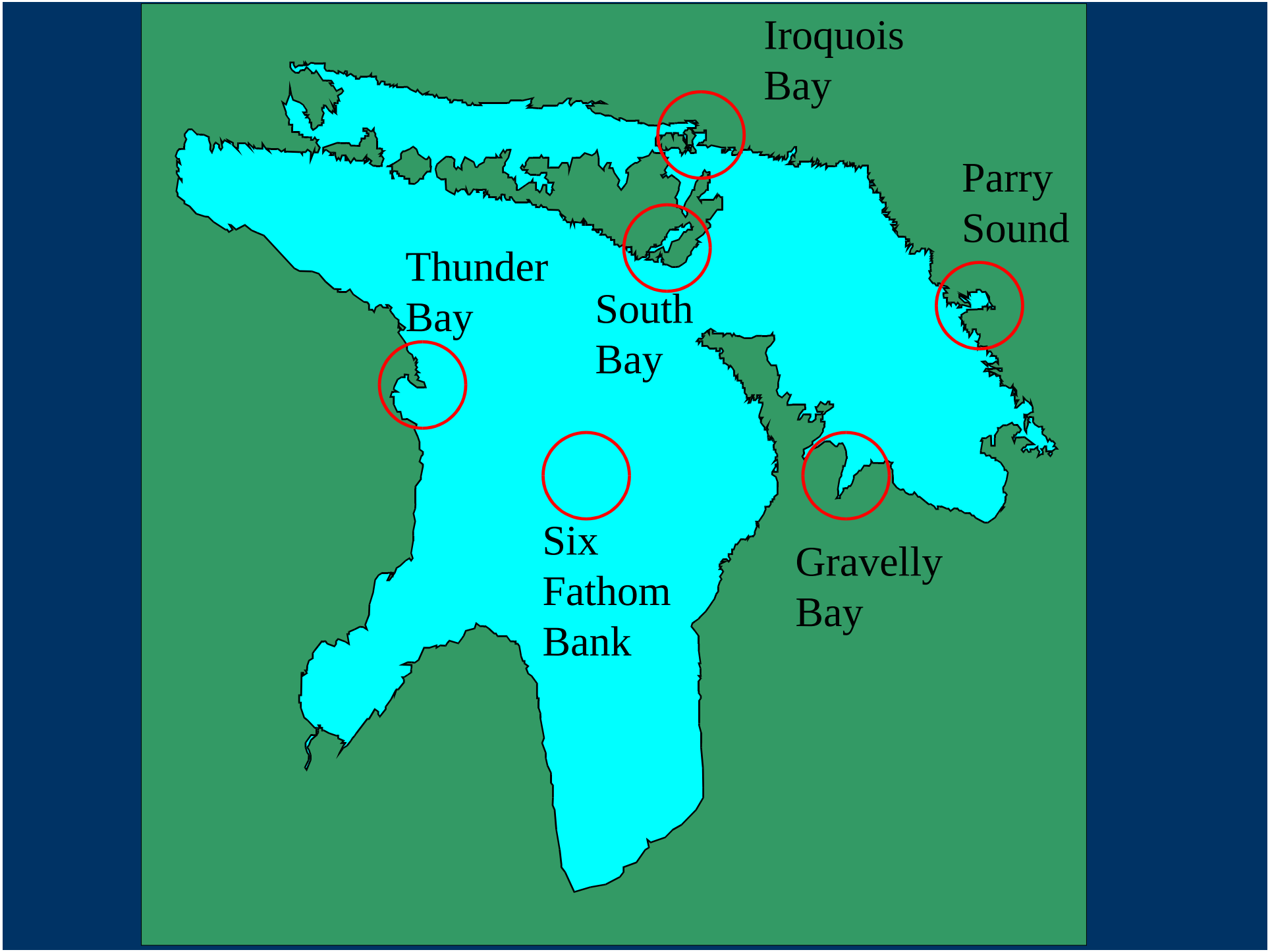
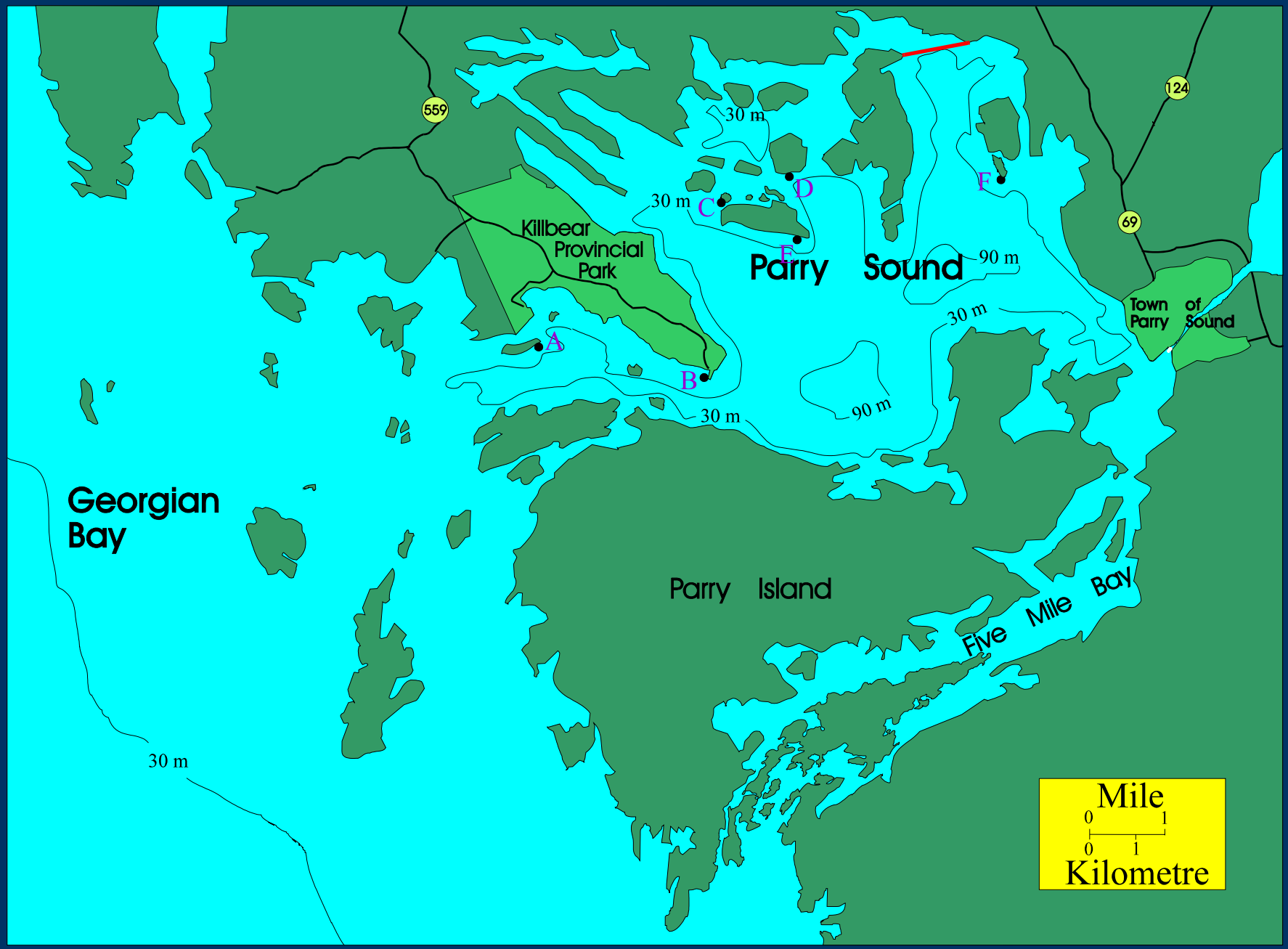
Ontario Ministry of Natural Resources

GLFC Lake Huron Symposium
March 2001
Sault Ste. Marie


Iroquois Bay
Parry Sound
Thunder Bay
South Bay
Six Fathom Bank
Gravelly Bay

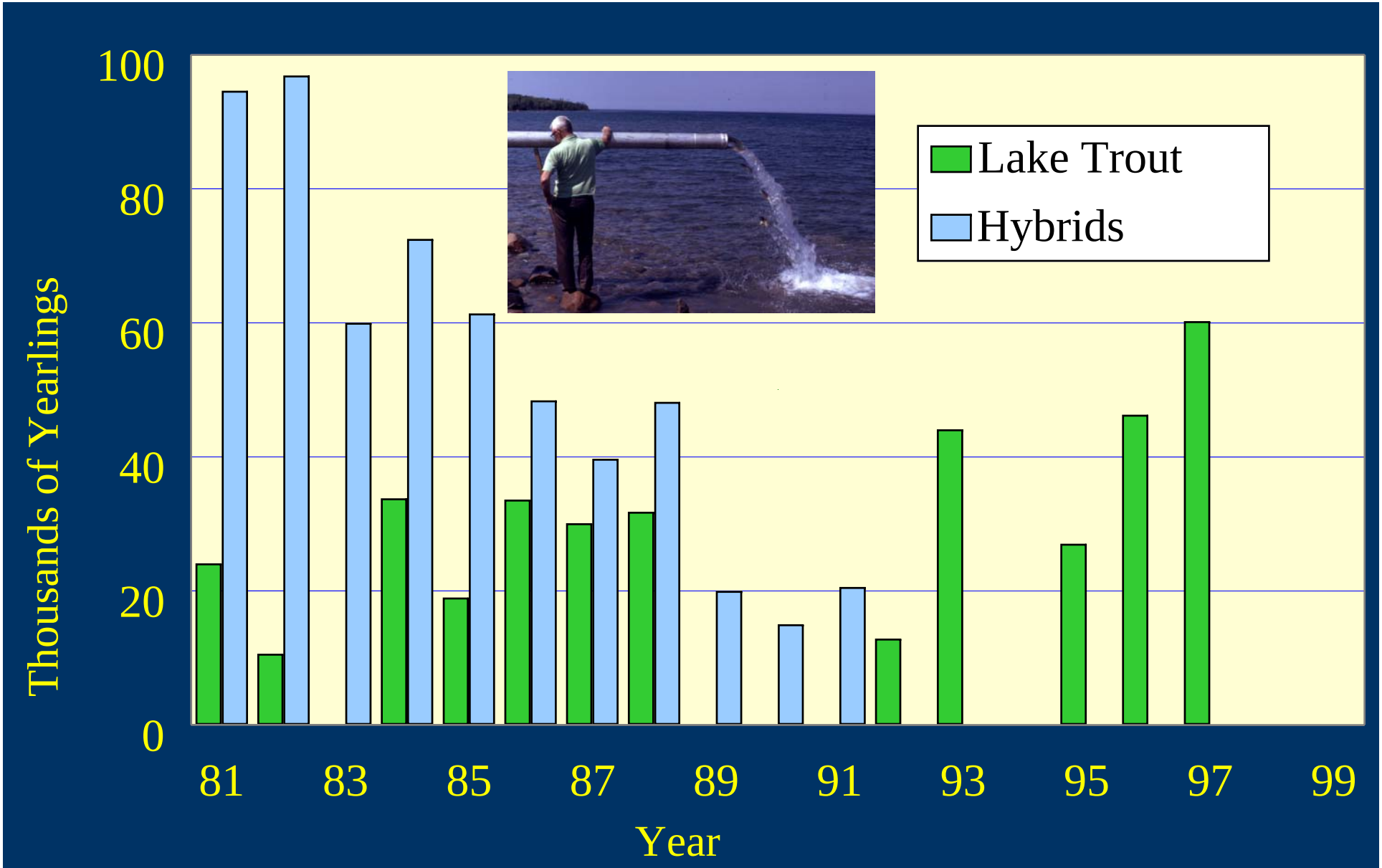

LAKE TROUT REHABILITATION
IN PARRY SOUND



Map of the Parry Sound area.

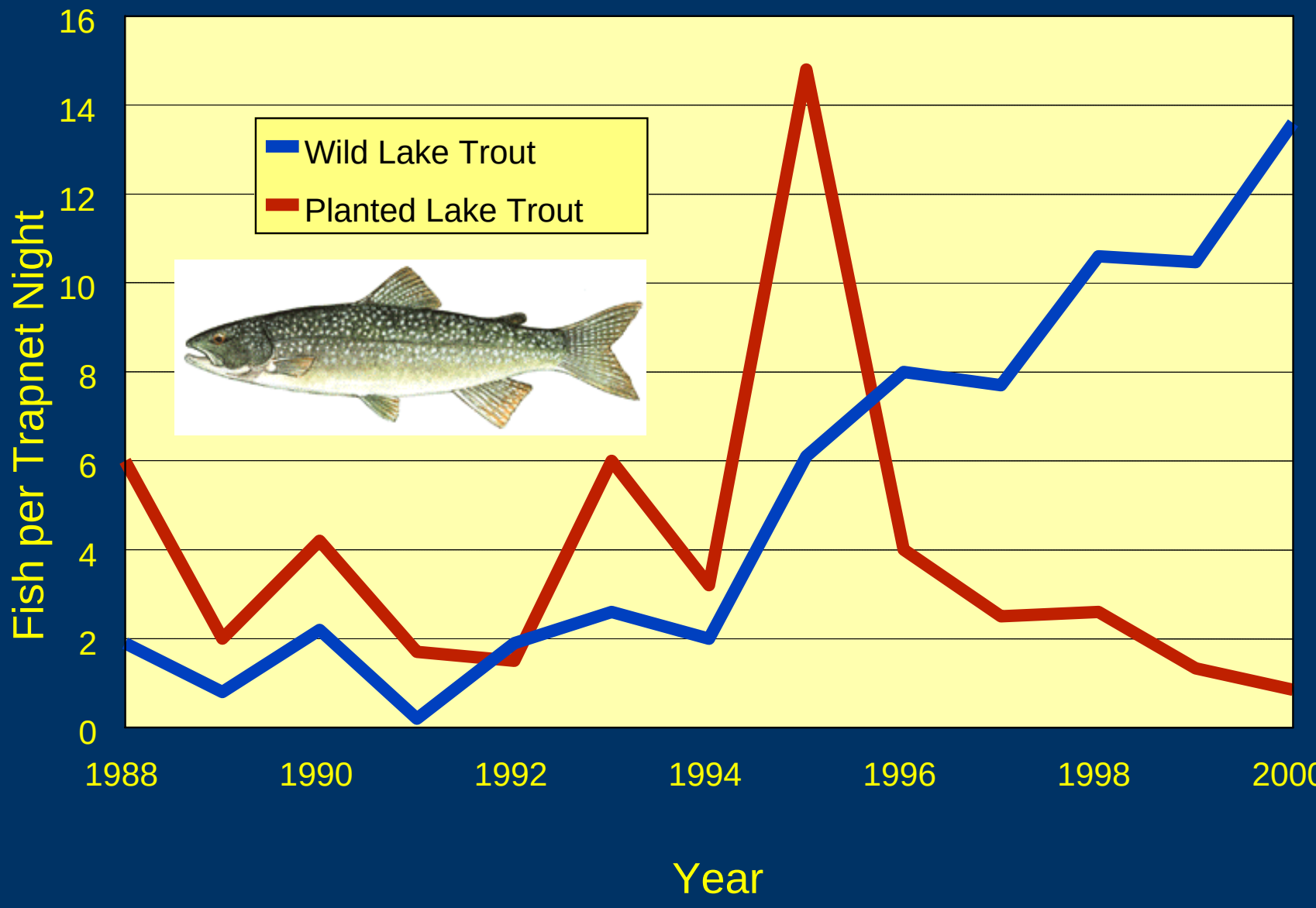
Sea Lamprey

- **Largest and deepest bay in Georgian Bay**
- **Isolated, with few lamprey streams delayed lamprey effects**
- **By 1958 high lamprey predation**
- **Large fish survive better than small**
- **No commercial fishing on top of sea lamprey**
- **Old fish survived until lamprey treatment in 1960s**
- **Residual sea lamprey and sport fishing kept population size depressed through the 1960s and 1970s**

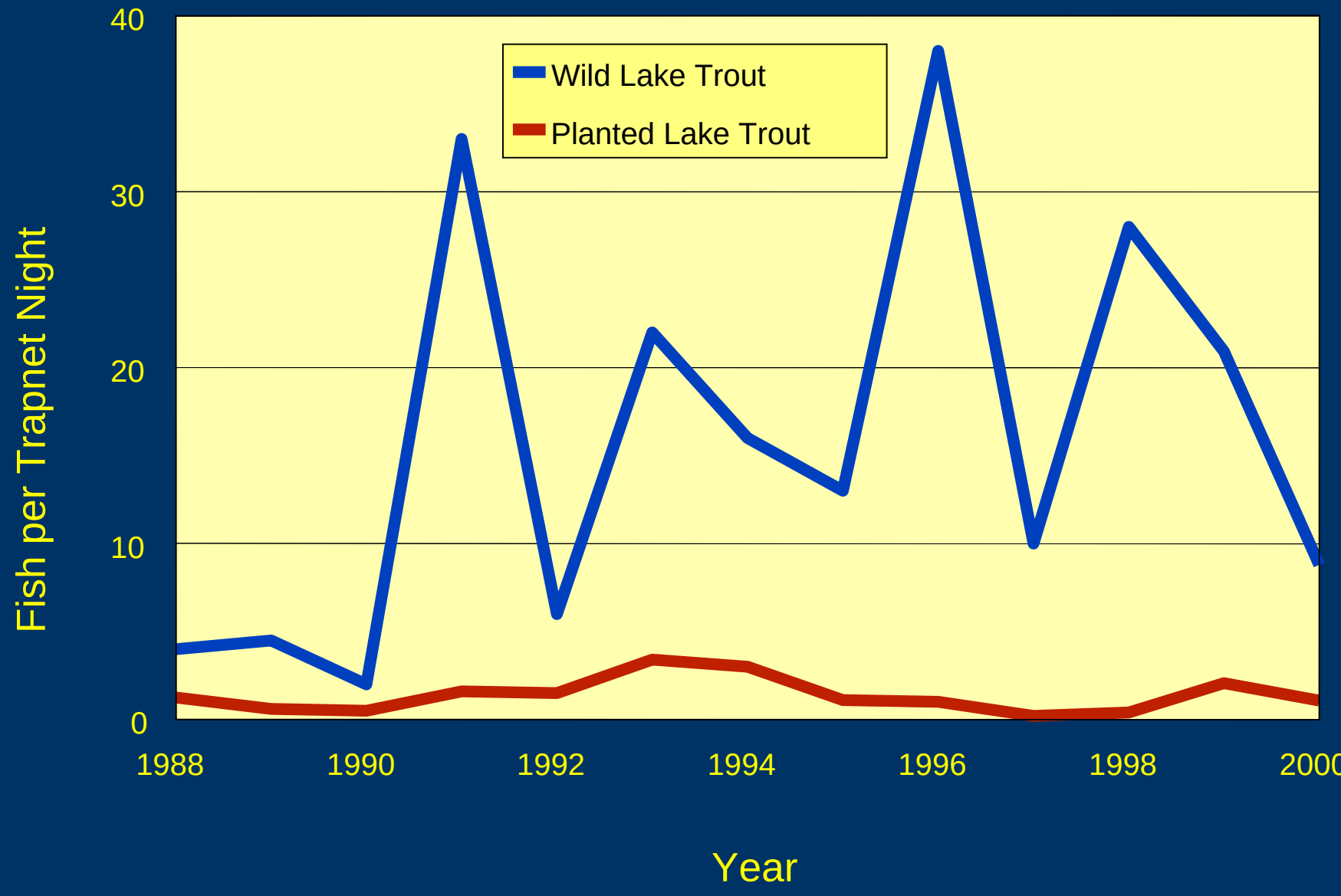


Plantings of lake trout and hybrid lake trout in the Big Sound, 1981 to 1999.


Feb. 8 to Mar. 31
June 24 to Aug. 31
Bag limit 1
Less than 61 cm
Lake trout refuge
Sport Fishing
Regulations

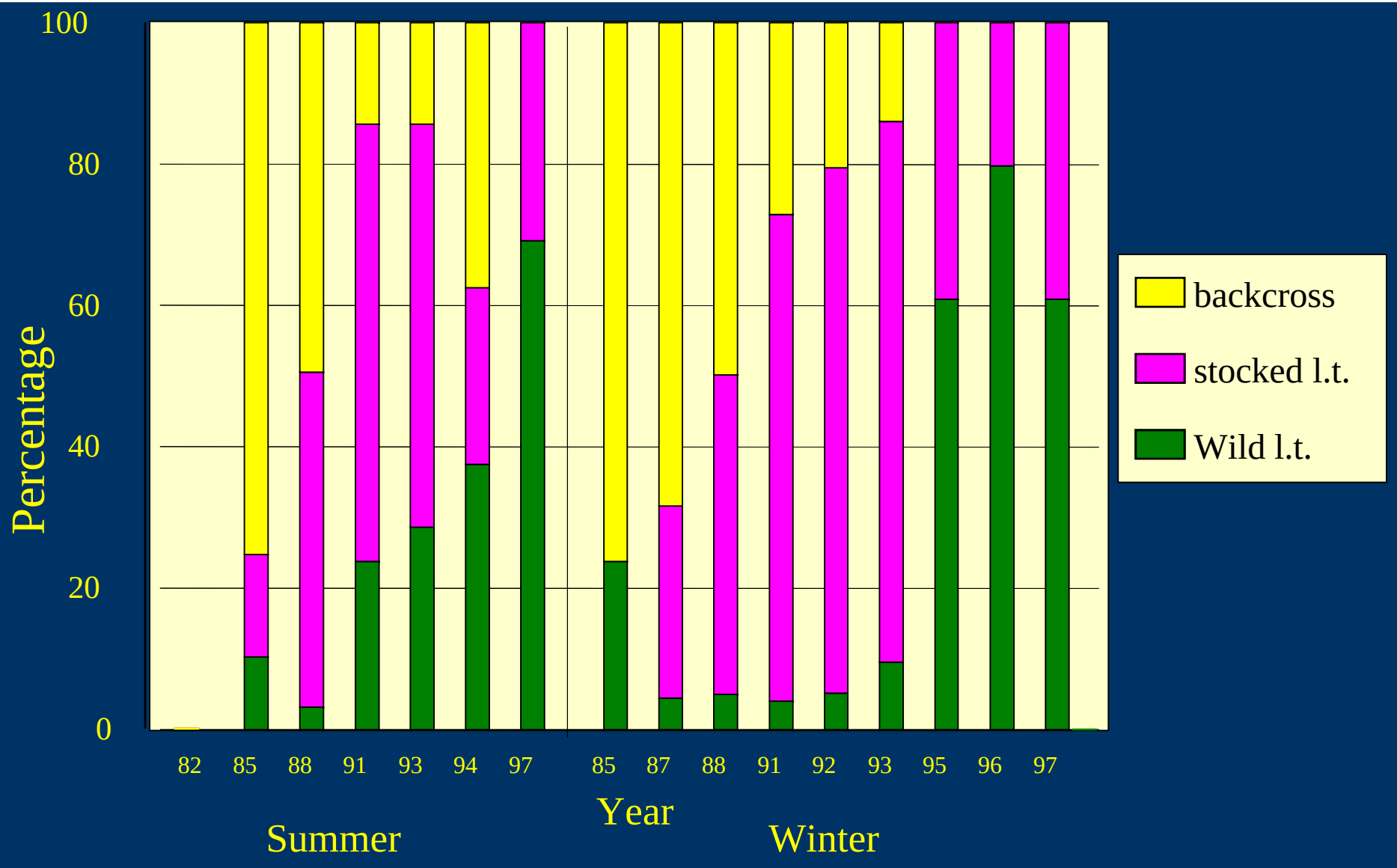


Horse Island lake trout spawner CUE, 1988 to 2000.

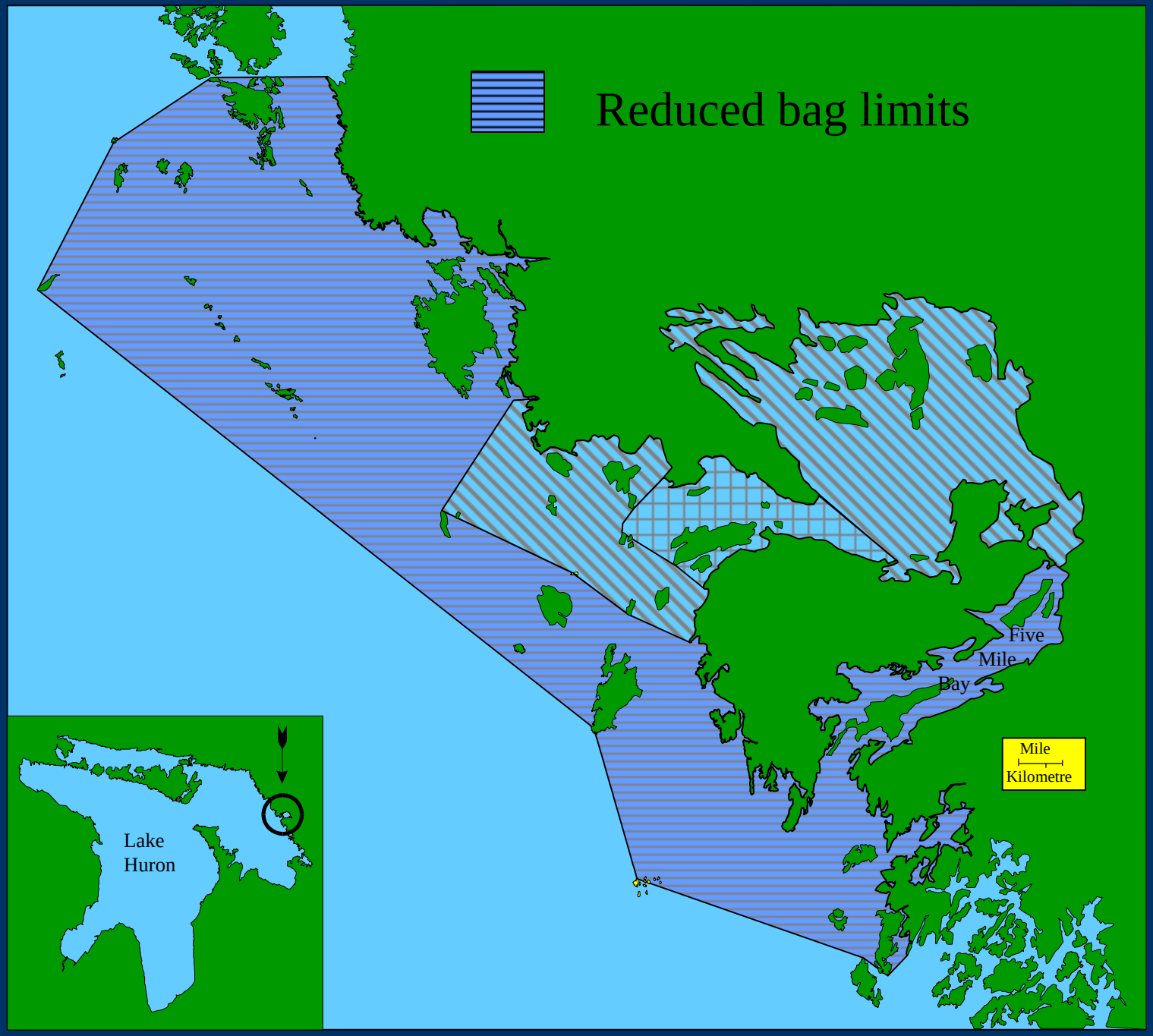


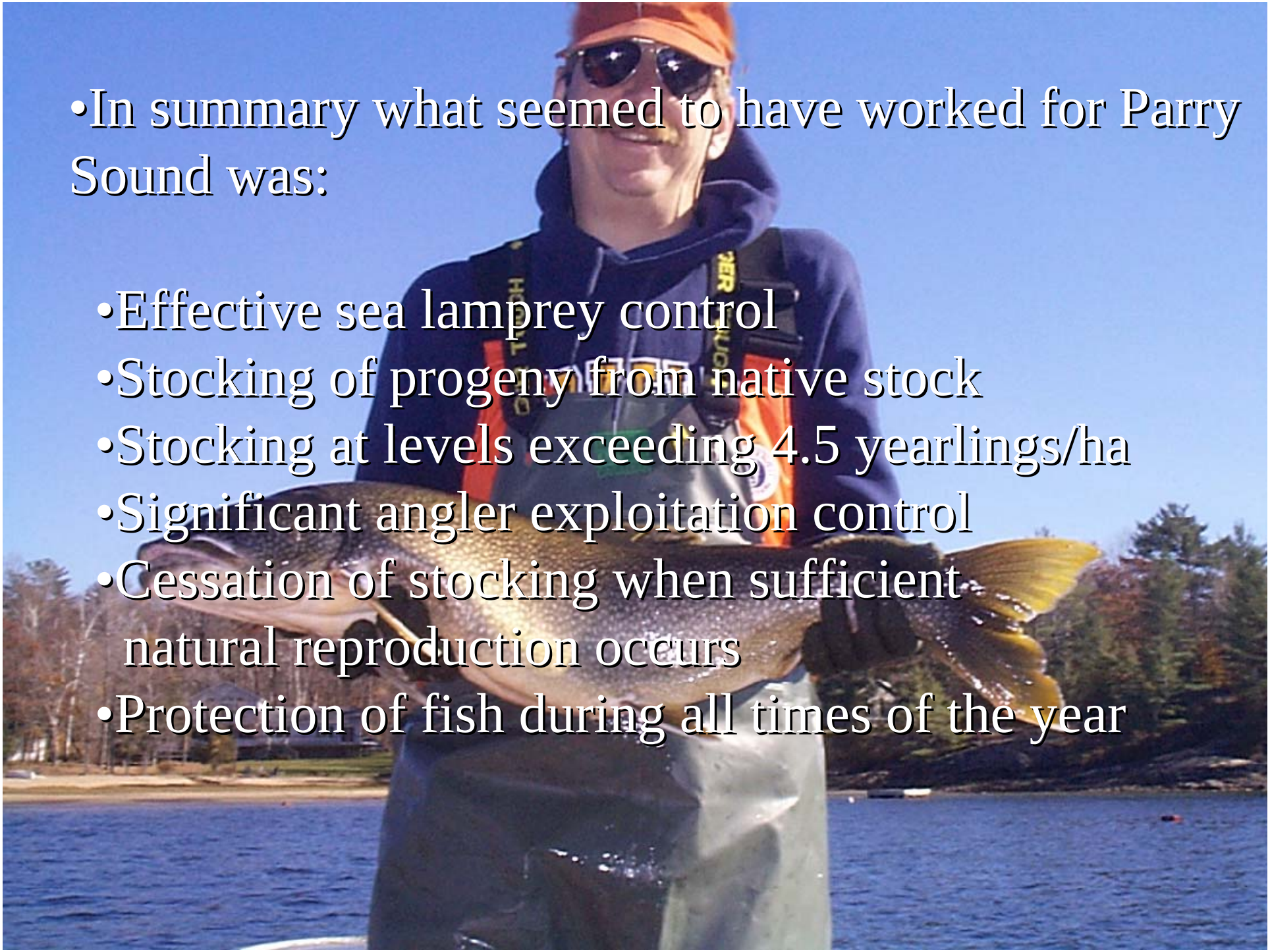
Davy Island lake trout spawner CUE, 1988 to 2000.

- Role of hatchery fish in rehabilitation
- Timing of events
- First fish stocked mature by 1987
- By 1988 stocked fish 59% of observed spawners
- Stocked fish contributed to 1988 and 1989 year classes
- Increase in progeny expected from these spawning events by 1995



Estimated percentage of trout harvested from the inner Parry Sound winter and summer creel surveys.


Reduced bag limits
Five
Mile
Bay
Mile
Kilometre
Lake
Huron



- In summary what seemed to have worked for Parry Sound was:
  - Effective sea lamprey control
  - Stocking of progeny from native stock
  - Stocking at levels exceeding 4.5 yearlings/ha
  - Significant angler exploitation control
  - Cessation of stocking when sufficient natural reproduction occurs
  - Protection of fish during all times of the year

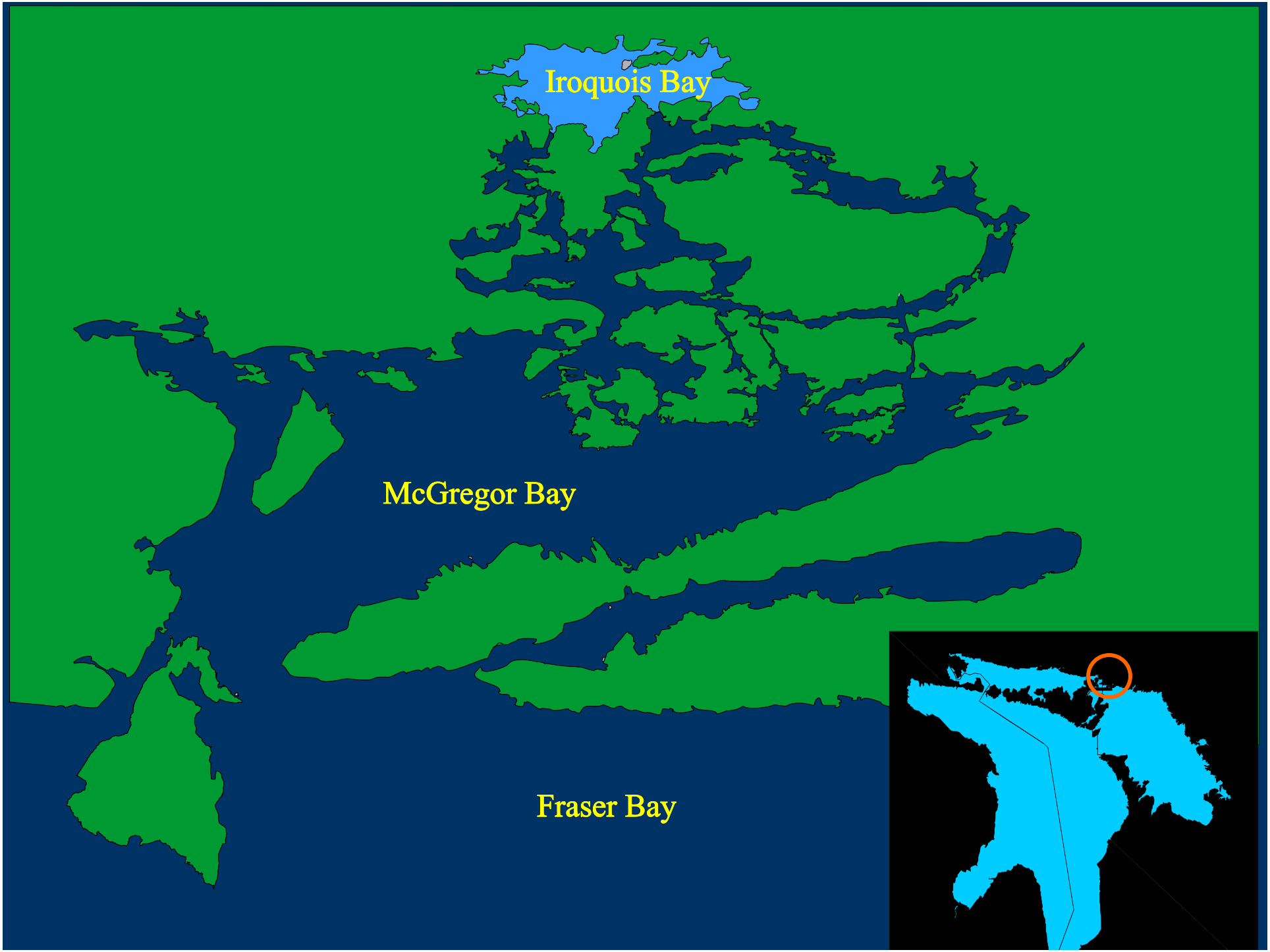
Current Status

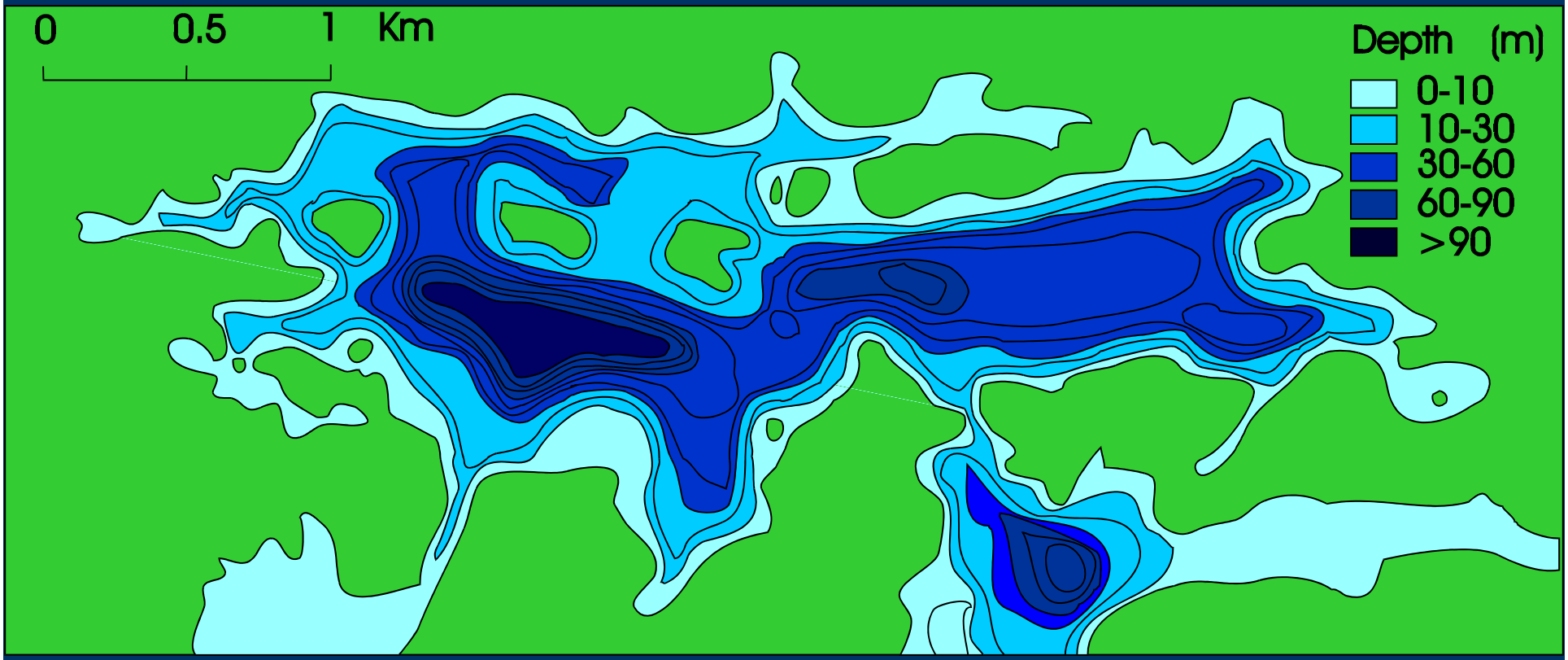
- Increasing harvest, few older and young fish.
- Mild winters 1998 to 2000 reduced winter harvest.
- More harvest beyond protected areas, fish mostly wild and from refuge area.

Future

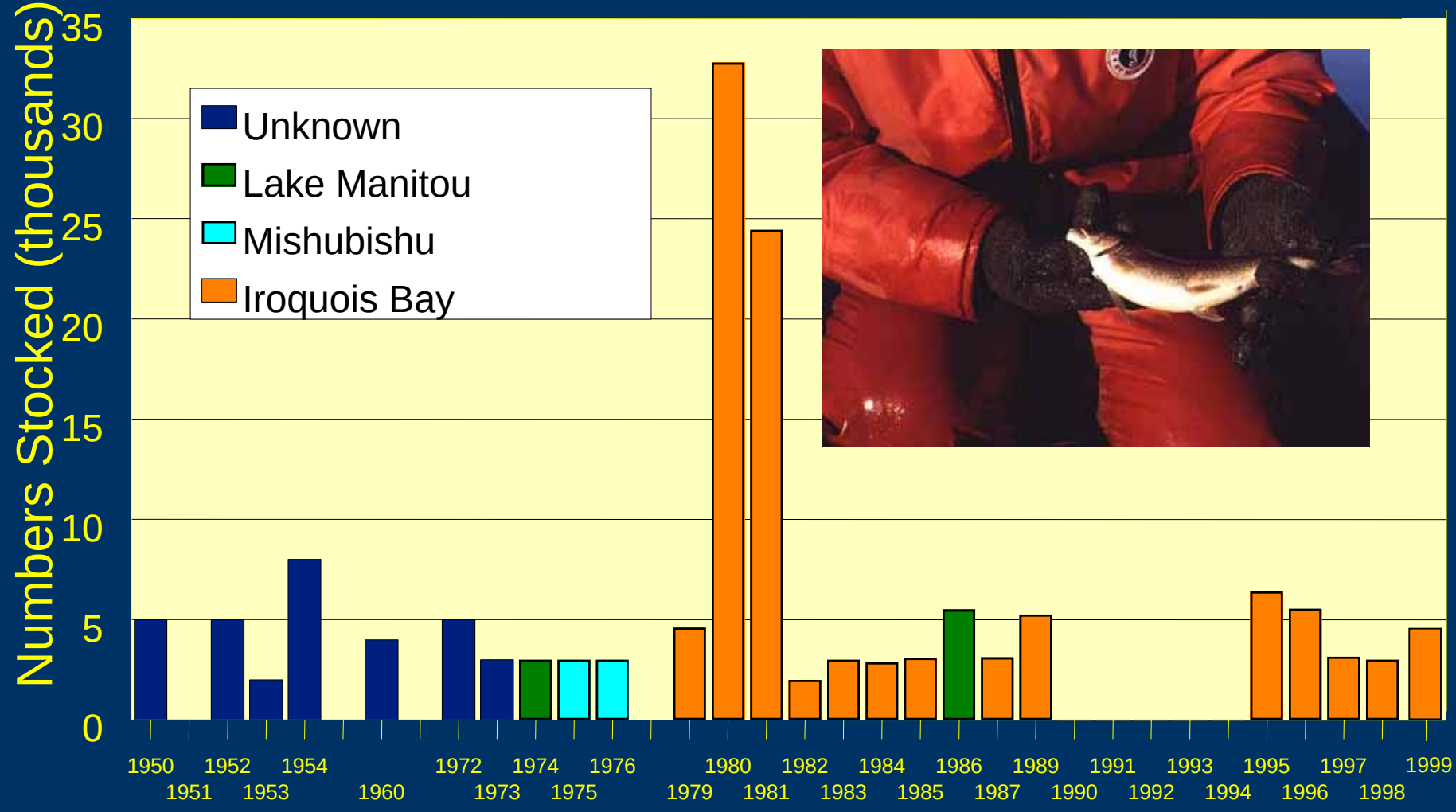
- Continue monitoring.
- Assess effects of stocking cessation and movements to GB.
- Stock Five Mile Bay & adjacent GB.
- Assess angler harvest in 2002.
- Harvest reduced in a wider area, but pressure to liberalize regs. in Parry Sound.

Iroquois Bay Lake Trout

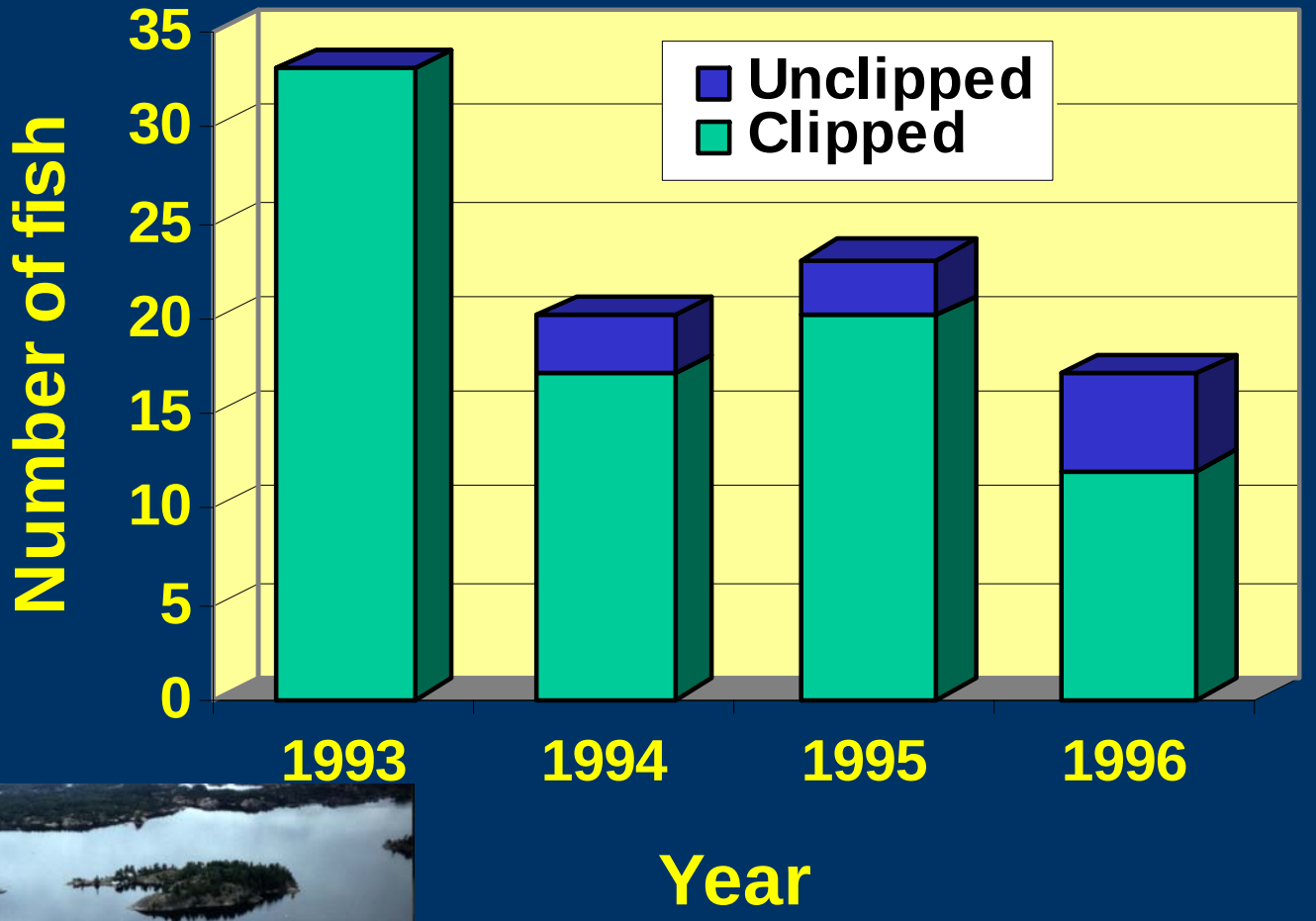

Iroquois Bay
McGregor Bay
Fraser Bay


0
0.5
1
Km
Depth (m)
0-10
10-30
30-60
60-90
>90

Lake Trout Stocking - Iroquois Bay



Iroquois Bay Lake Trout

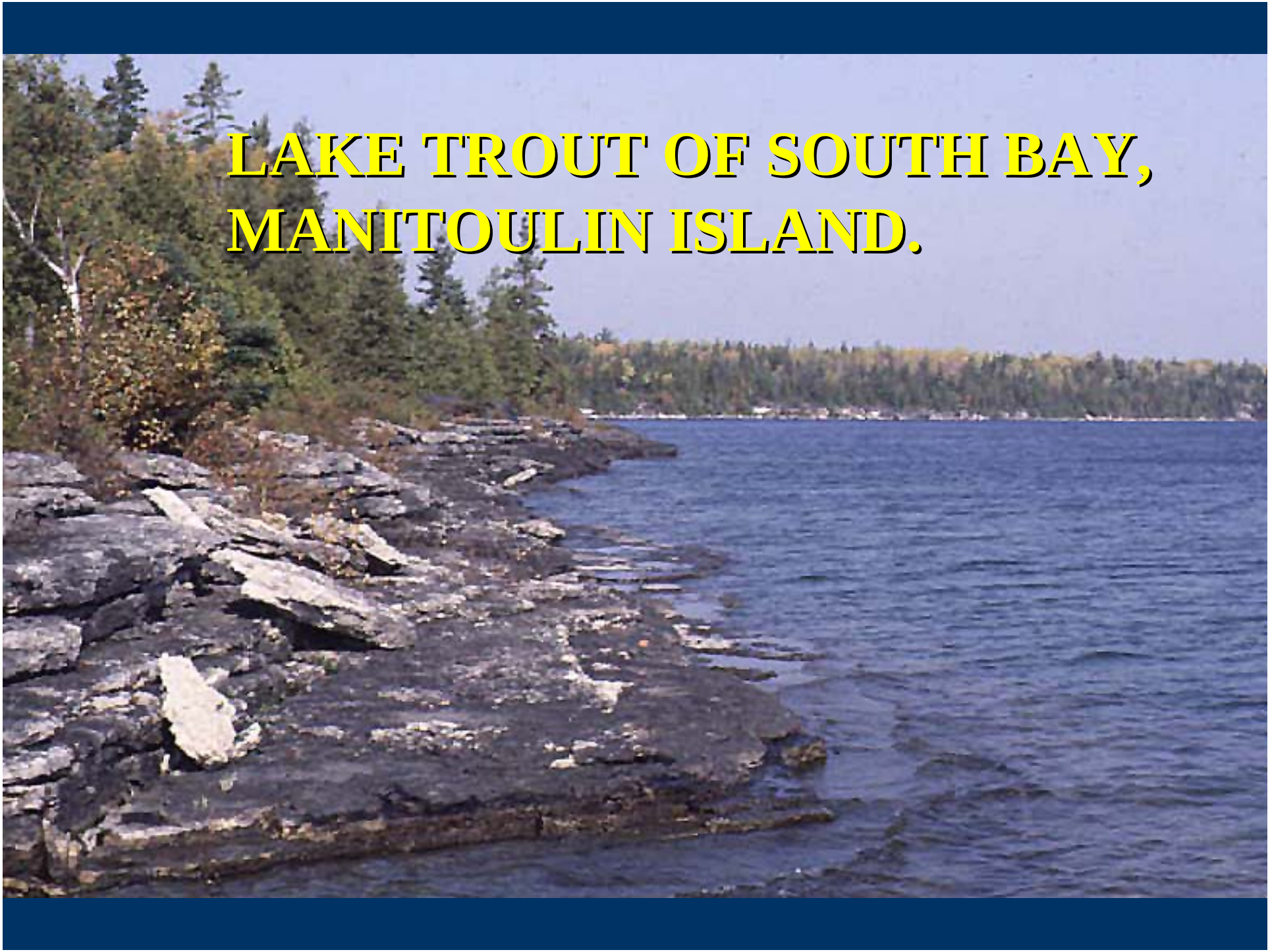


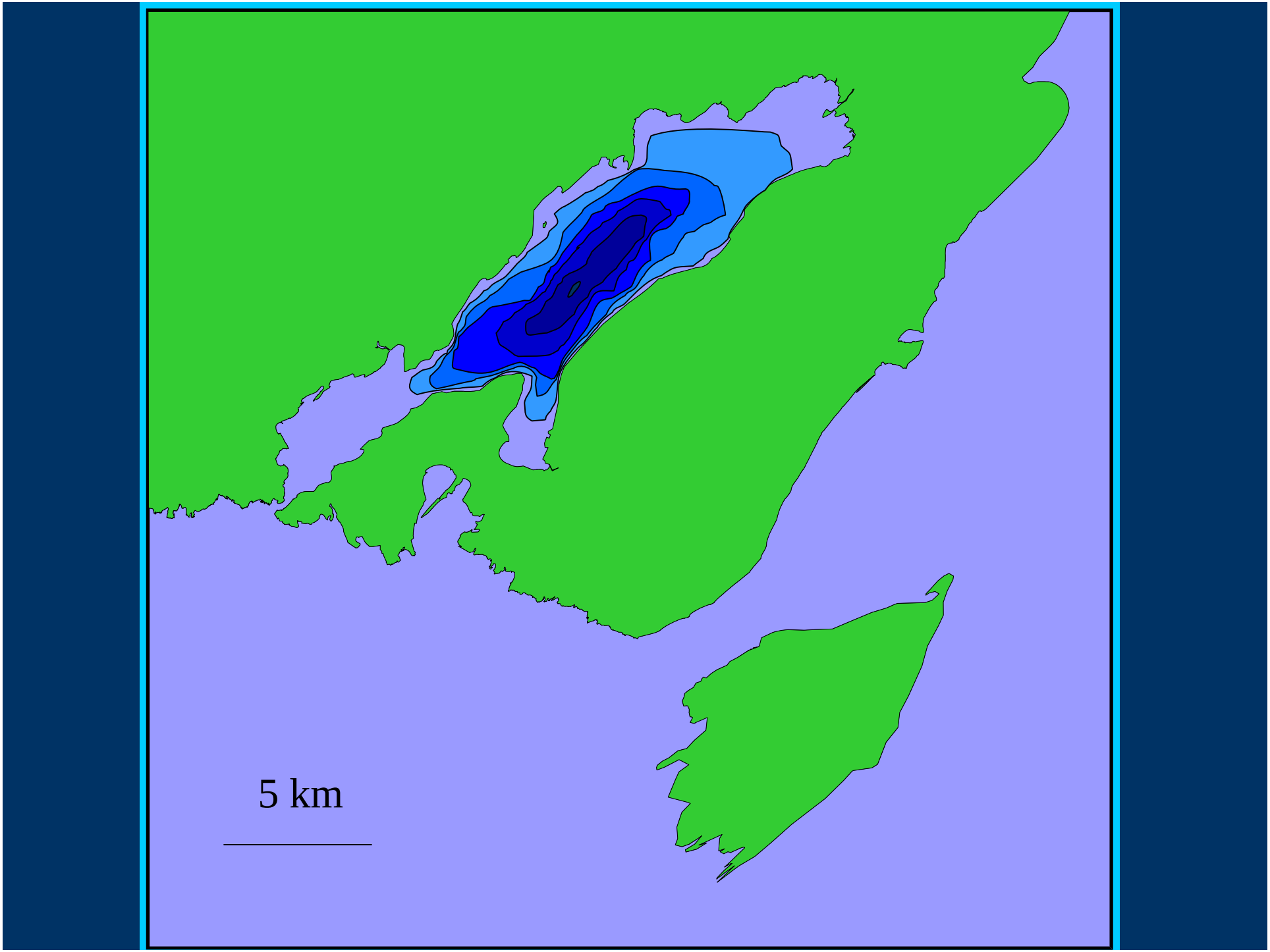
- **Regulation changes for 1999:**

  - reduce creel from 3 to 1 fish

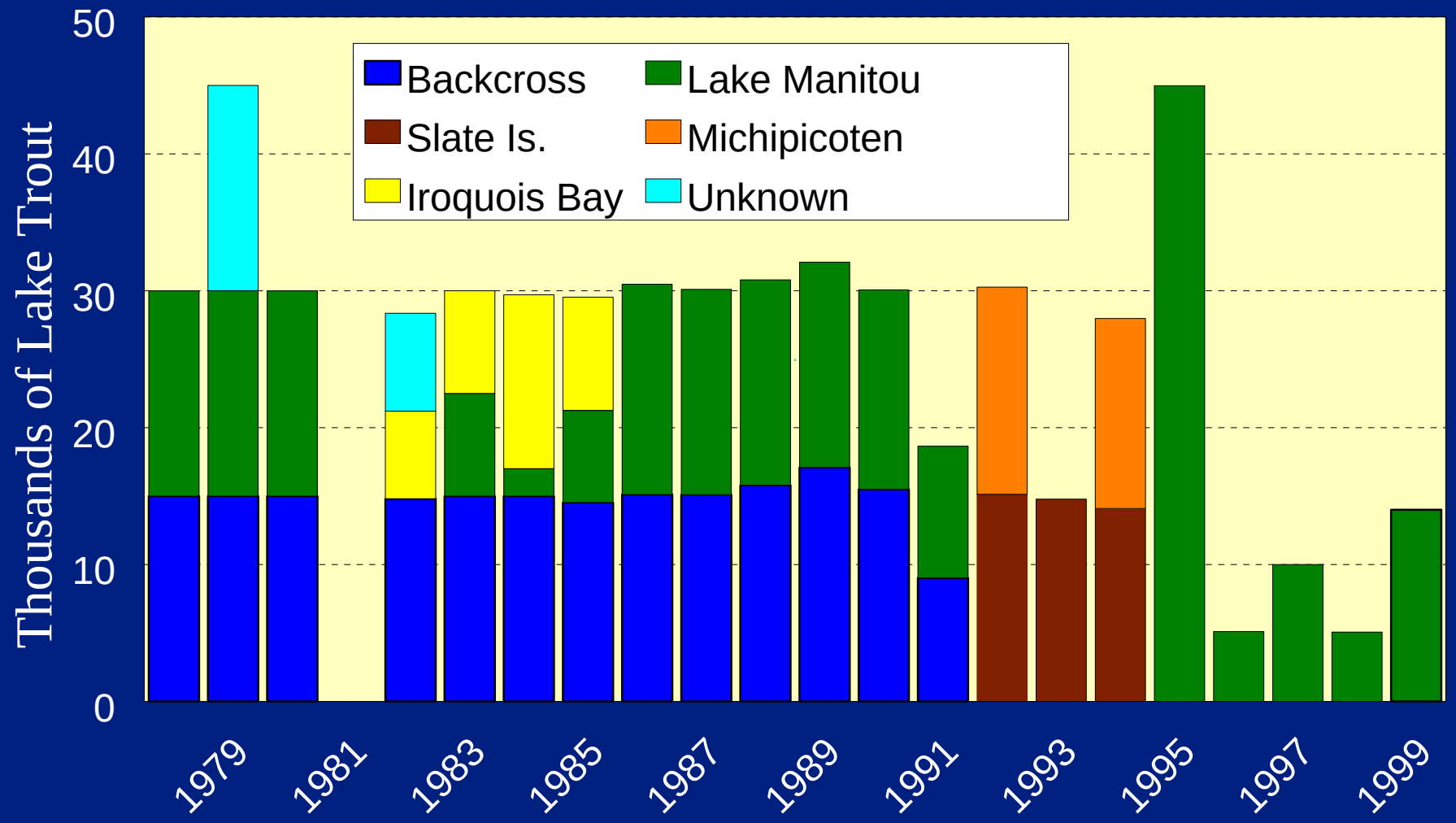
  - maximum size limit of 20”

  - mandatory release of unclipped fish


LAKE TROUT OF SOUTH BAY,
MANITOULIN ISLAND.


5 km

Lake Trout Stocking - South Bay



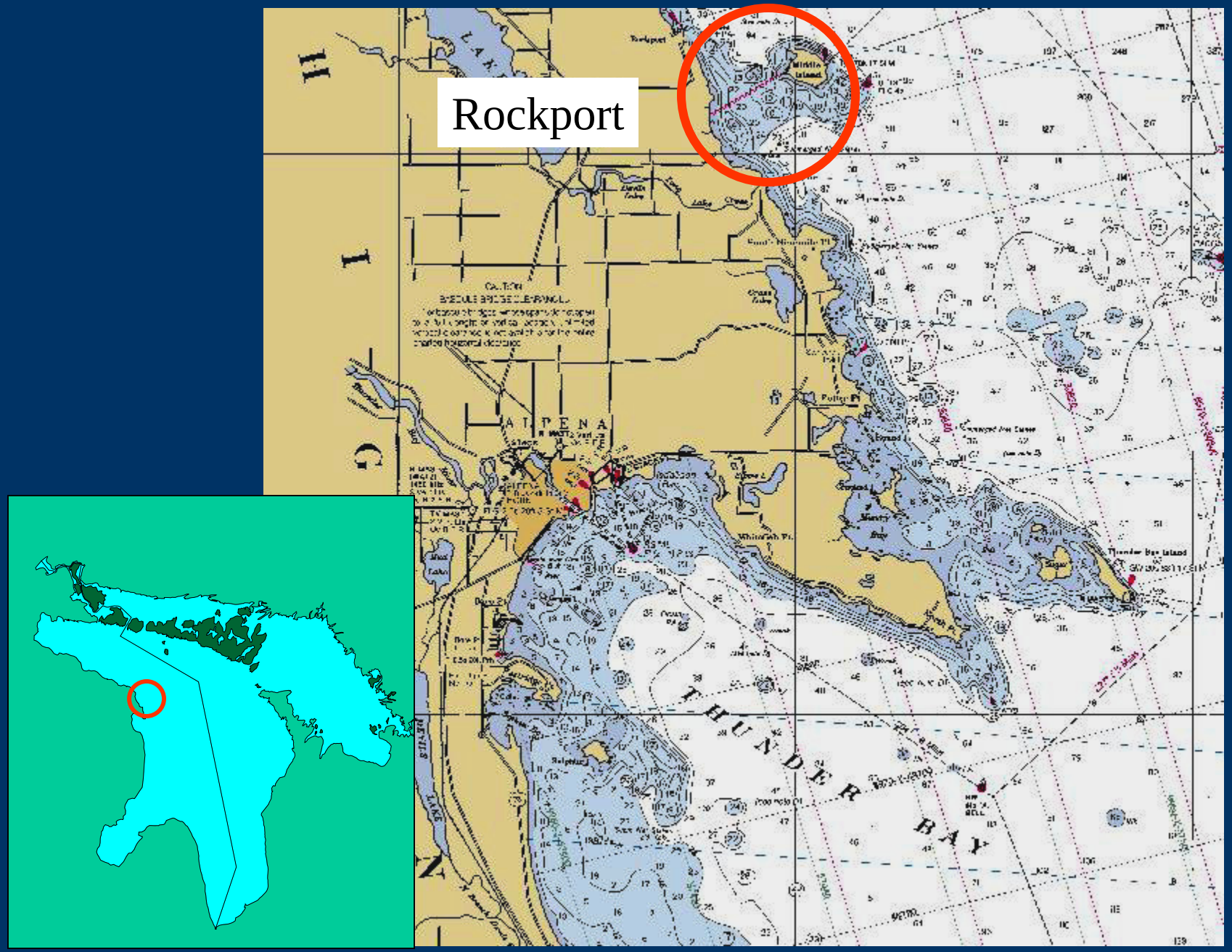
- Wild lake trout observed from 1986 to 1992.

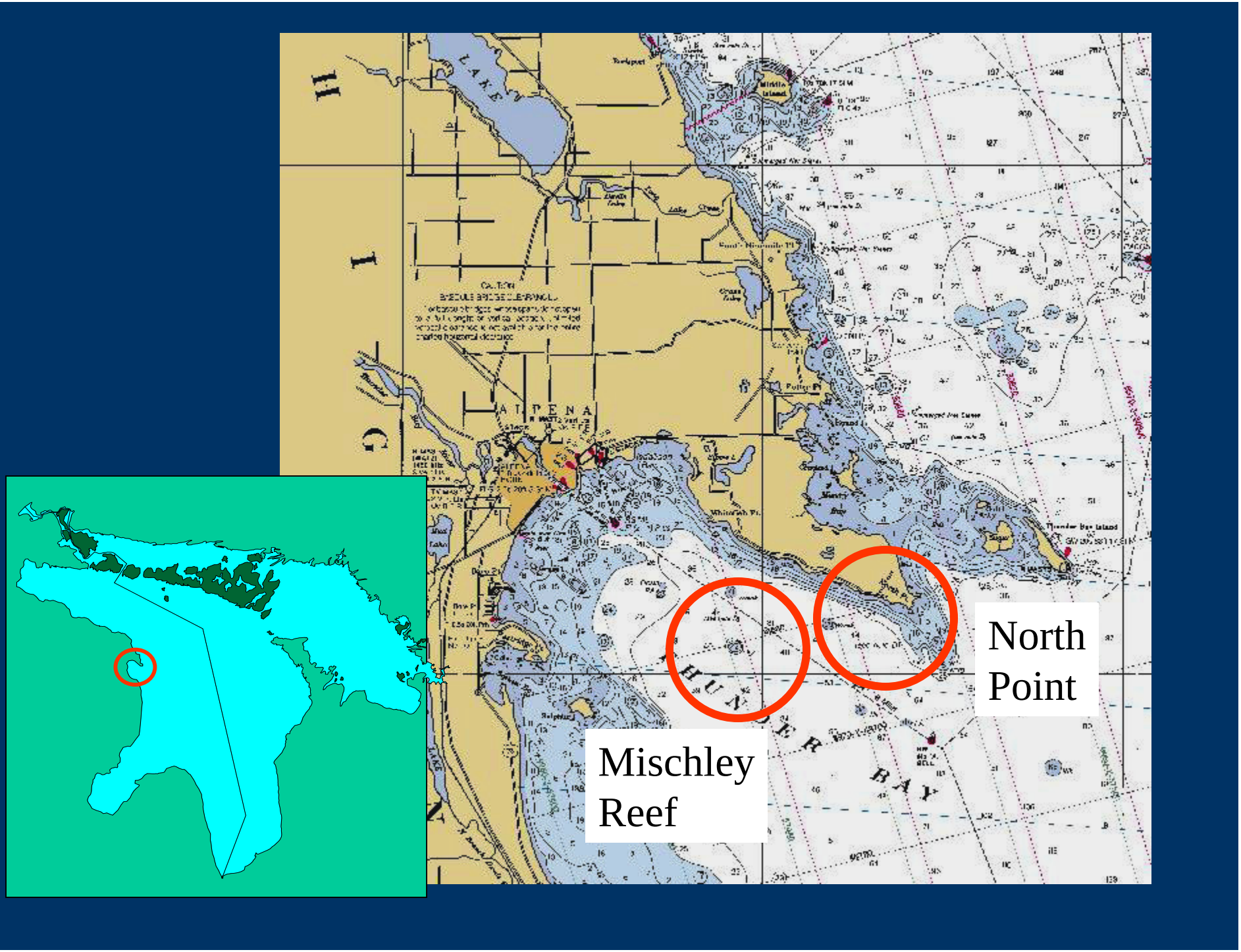
- High exploitation rates in the early 1980s.

- Little evidence of lake trout natural reproduction since the early 1990s.

- High exploitation rate appears to have restricted rehabilitation.

- Will continue to stock
- Need to address exploitation issue.


Rockport
ALPENA
THUNDER BAY


North
Point
Mischley
Reef

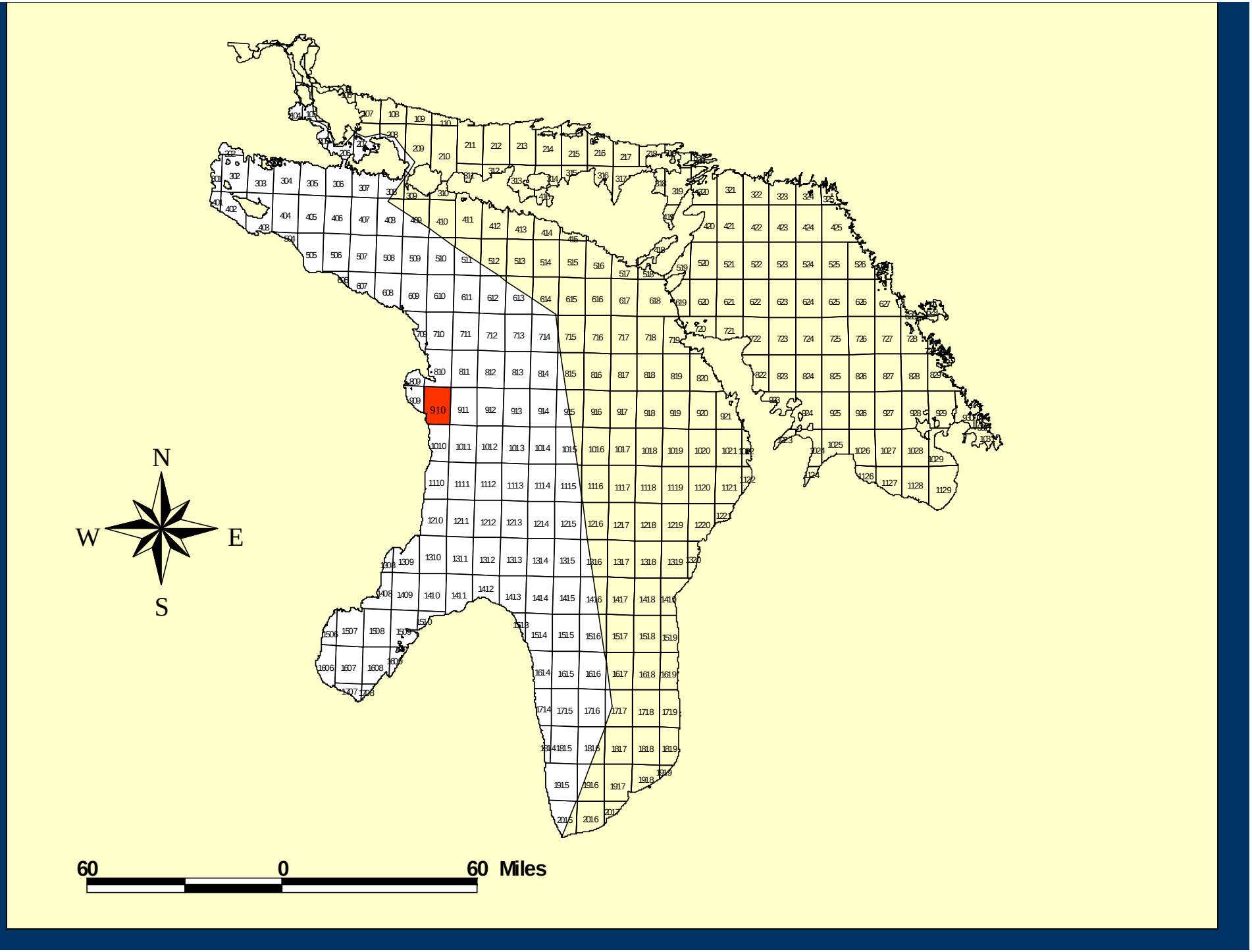
Catch Per Unit Effort of YOY Lake Trout at North Point, Thunder Bay, MI

Number of YOY lake trout per tow

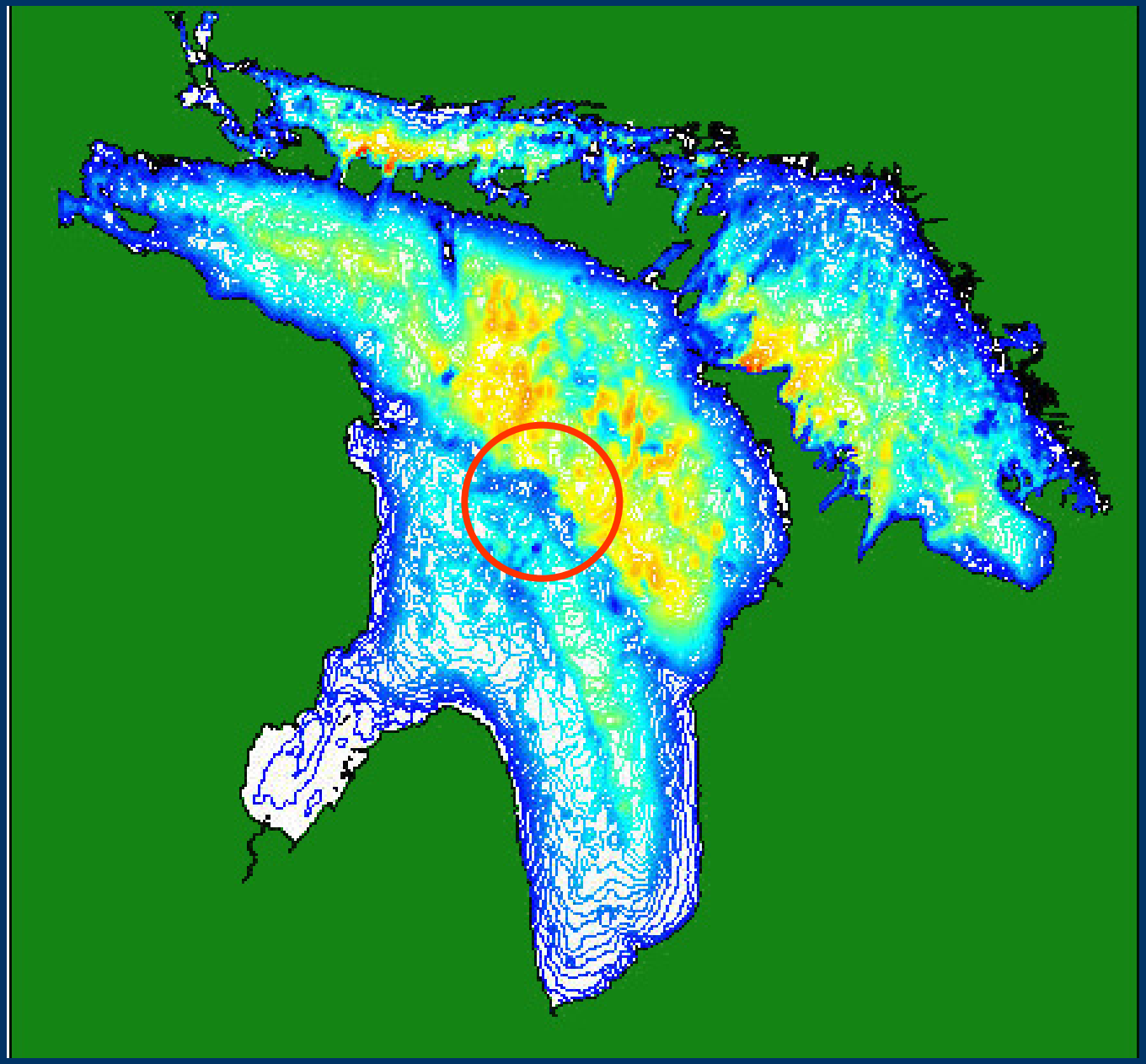
3
2.5
2
1.5
1
0.5
0

1986 1988 1990 1992 1994 1996 1998

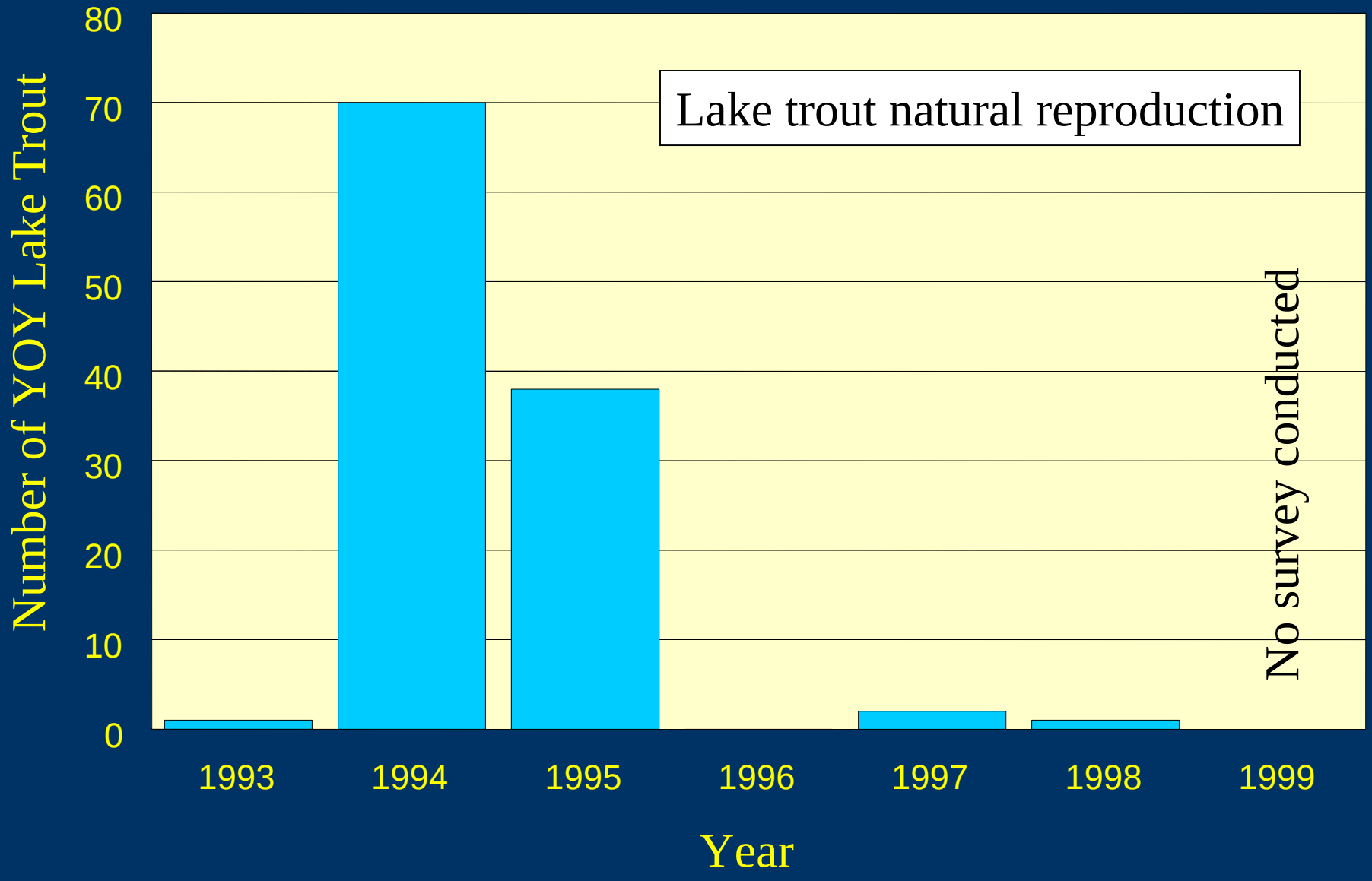
Year

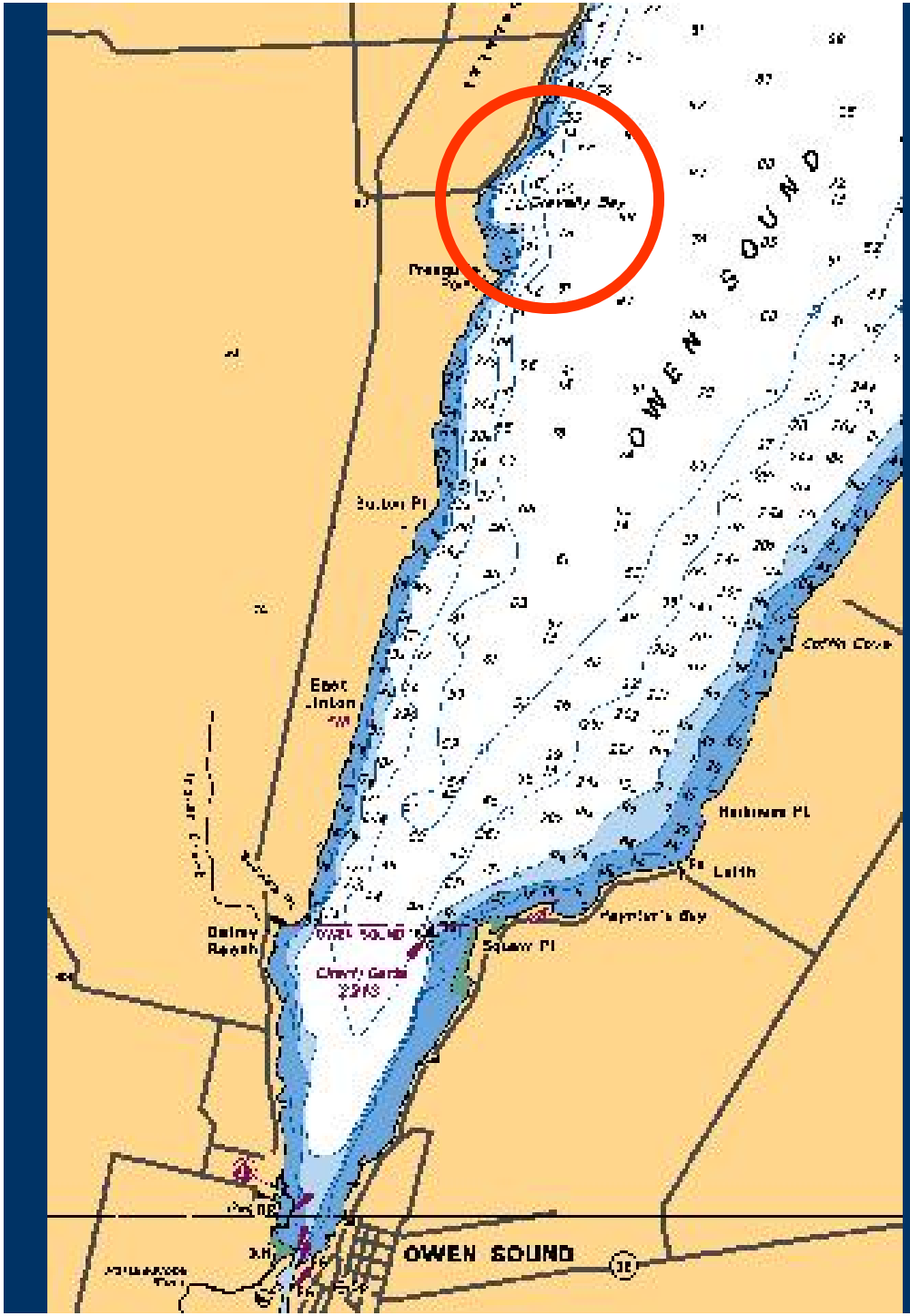

N
W
E
S
910
60
0
60 Miles

Six Fathom Bank



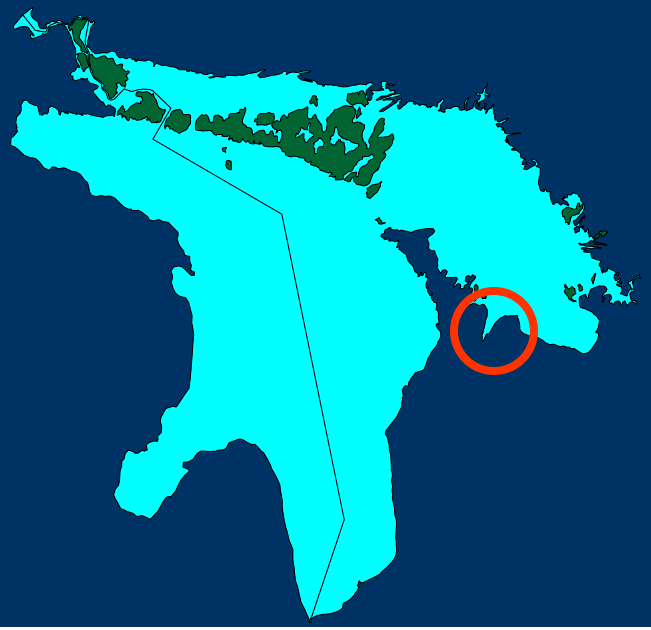
Six Fathom Bank



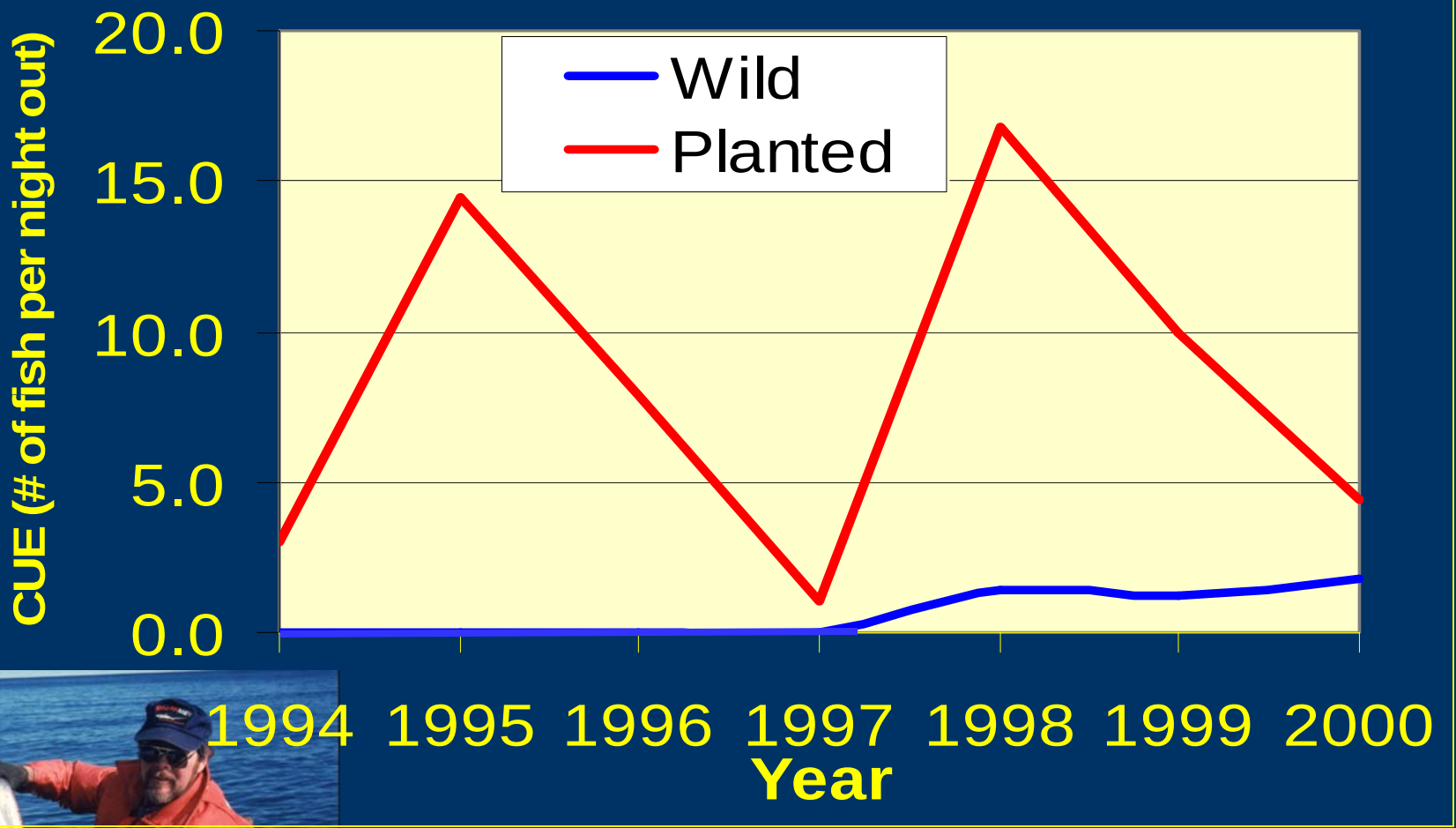


Gravelly Bay

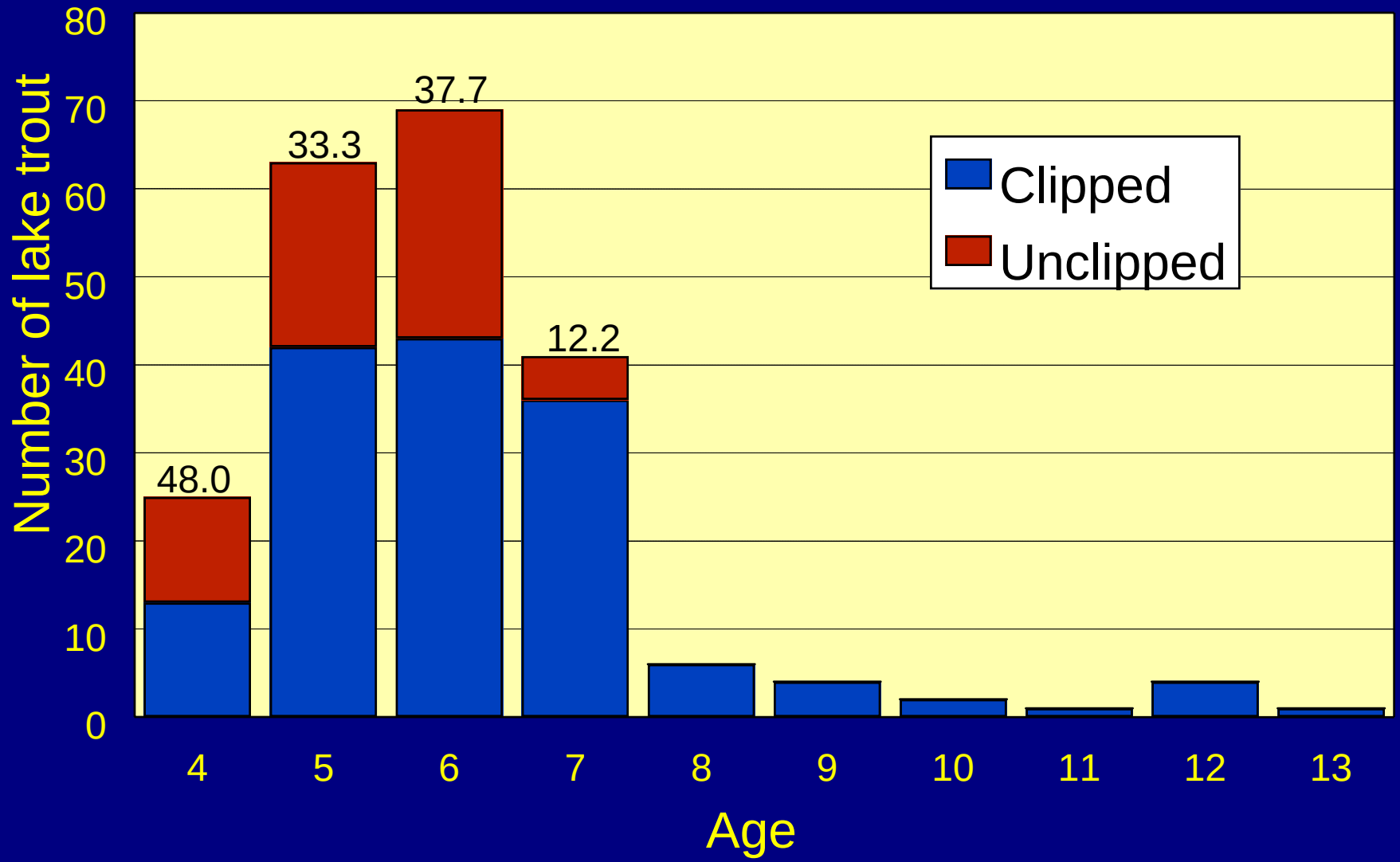
- Site near Owen Sound
- Monitored by trapnet since 1994
- Increase in number of unclipped lake trout in 1998



Gravelly Bay Fall Trap - Lake Trout CUE



Age of clipped and unclipped lake trout from Gravelly Bay, Lake Huron, 2000.



Lake Trout Rehabilitation Plan for the Ontario Waters of Lake Huron

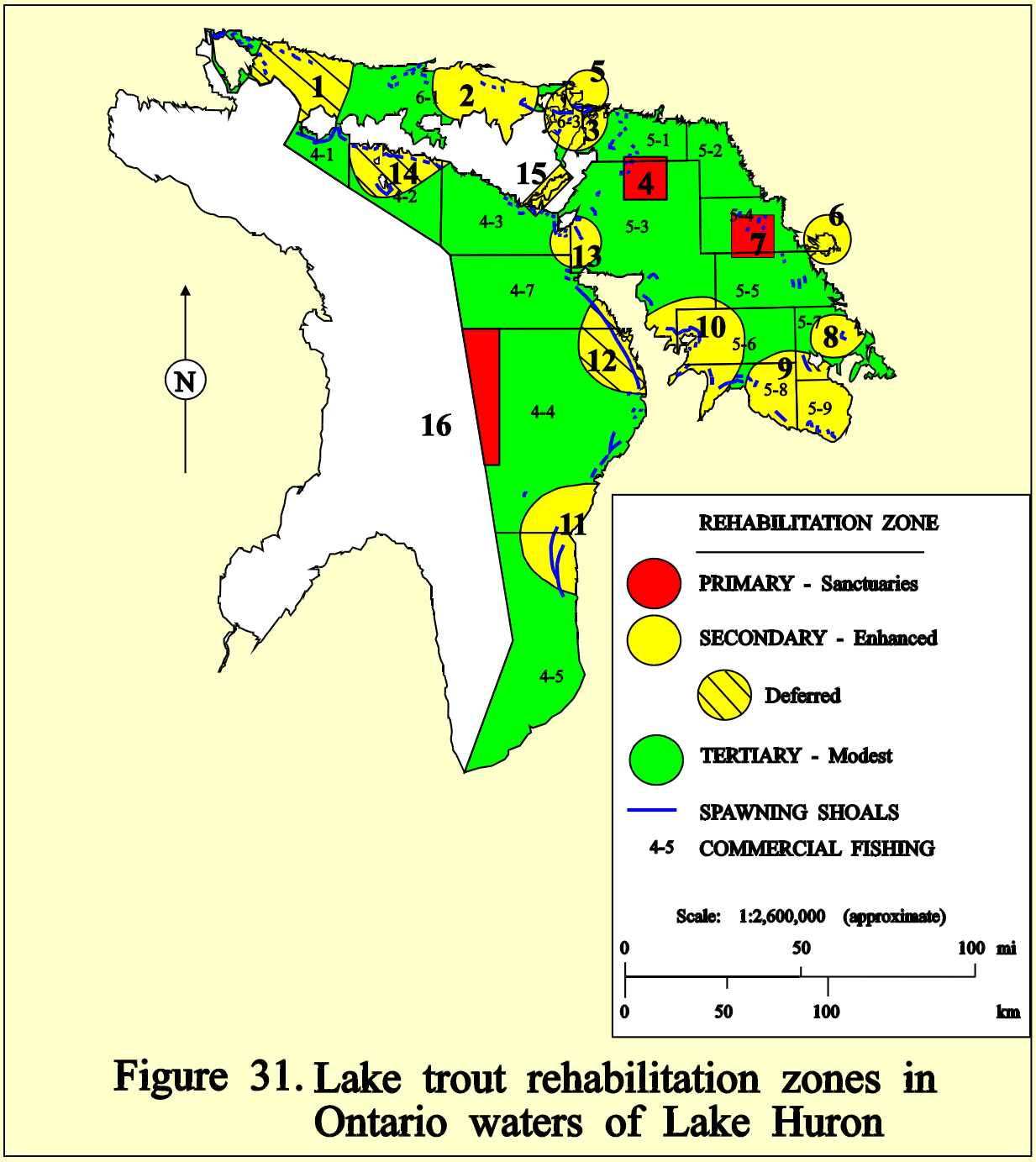
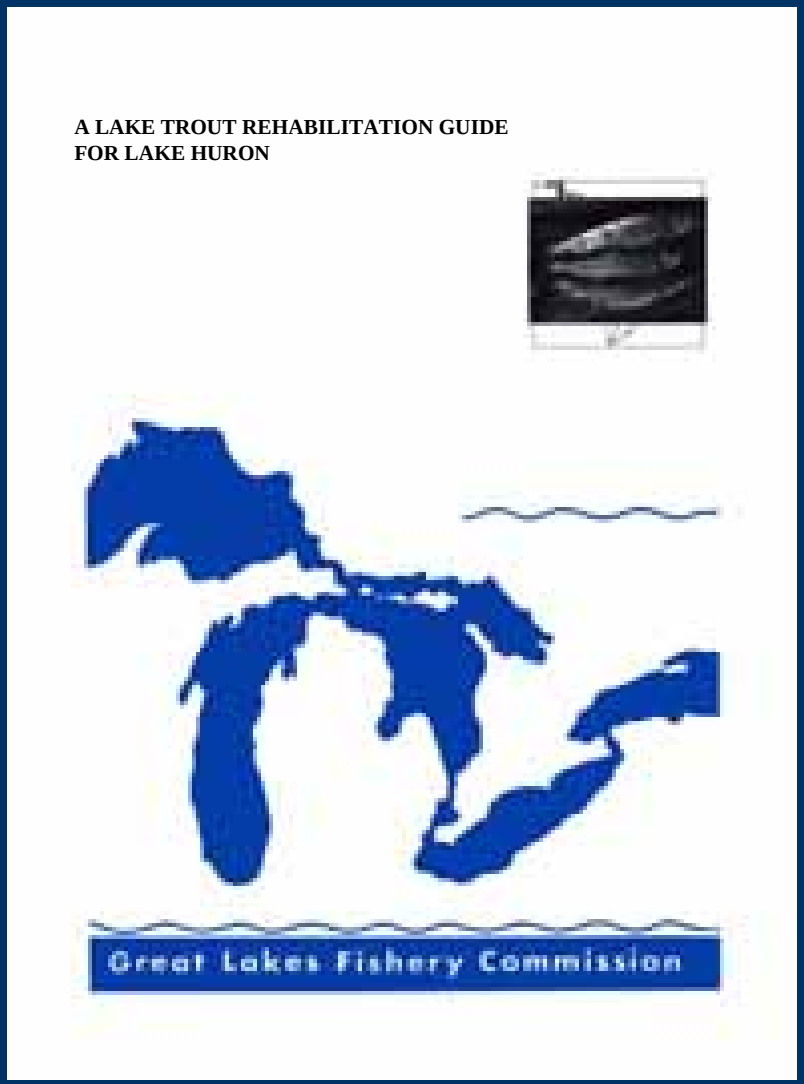


Figure 31. Lake trout rehabilitation zones in Ontario waters of Lake Huron

- Need to consider lake-wide approach to exploitation control.

- OMNR developing an assessment strategy to monitor the various lake trout rehabilitation zones.

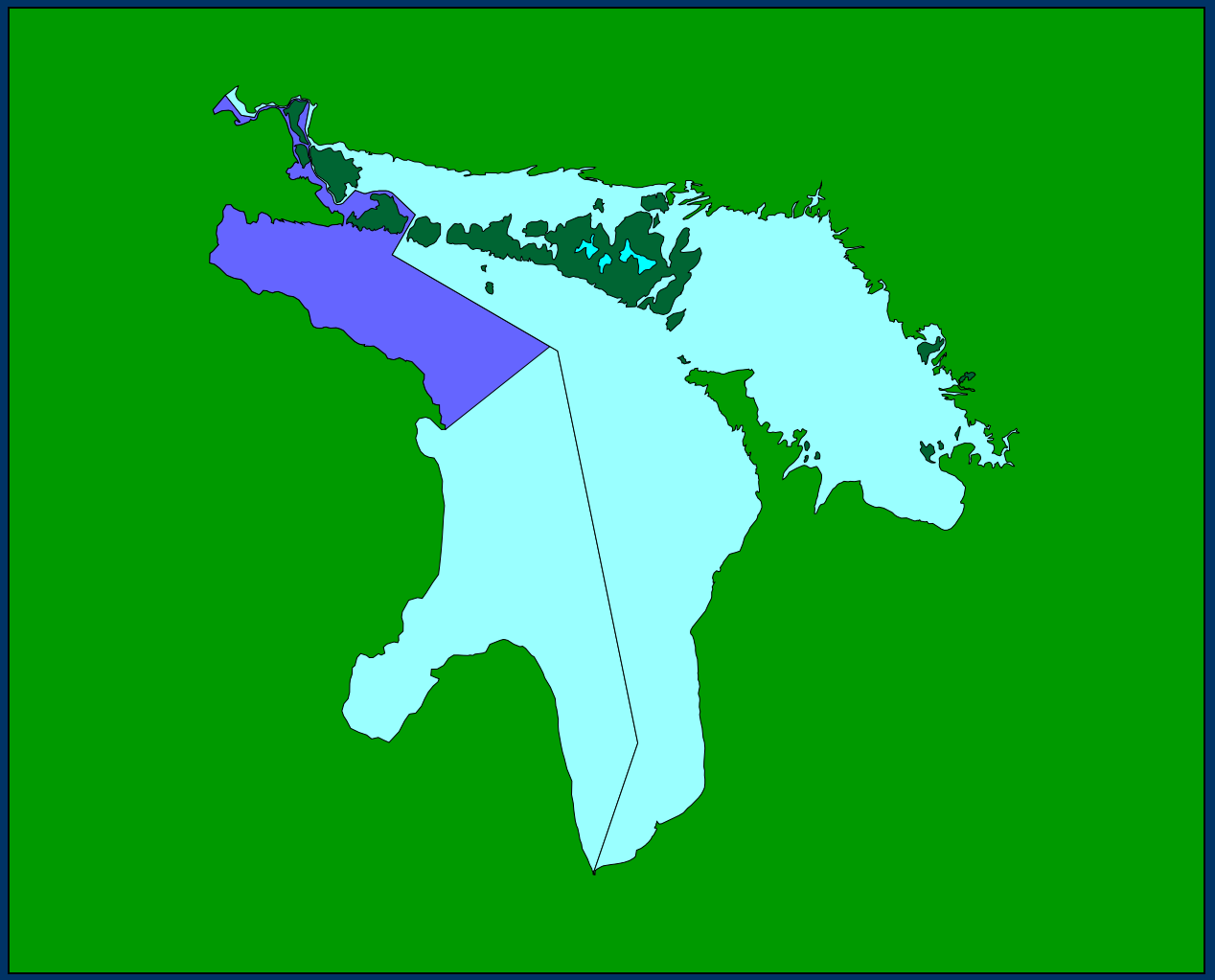


- International coordination of lake trout rehabilitation
- Need to decide on compatible approach

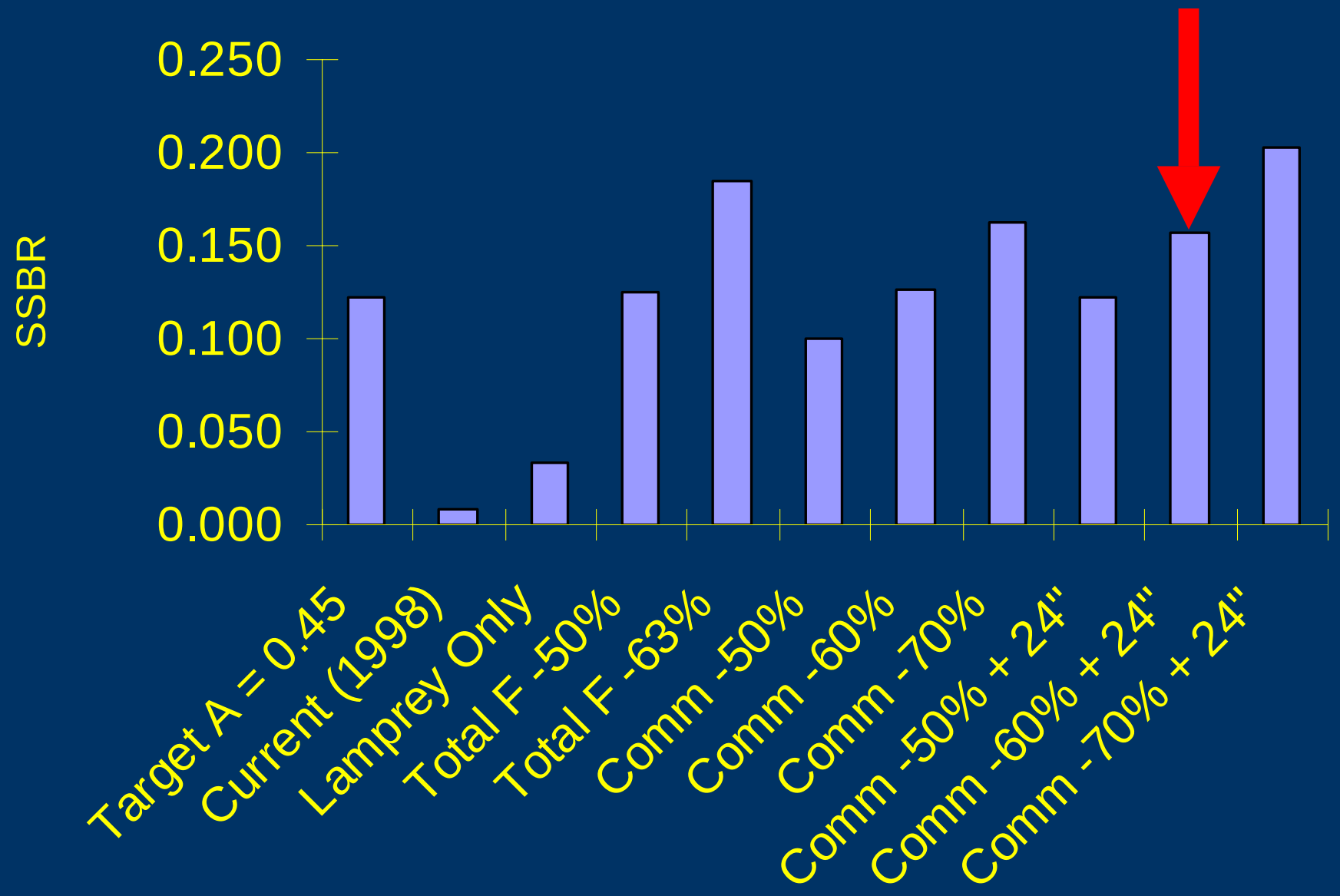
1836 Treaty Area Agreement

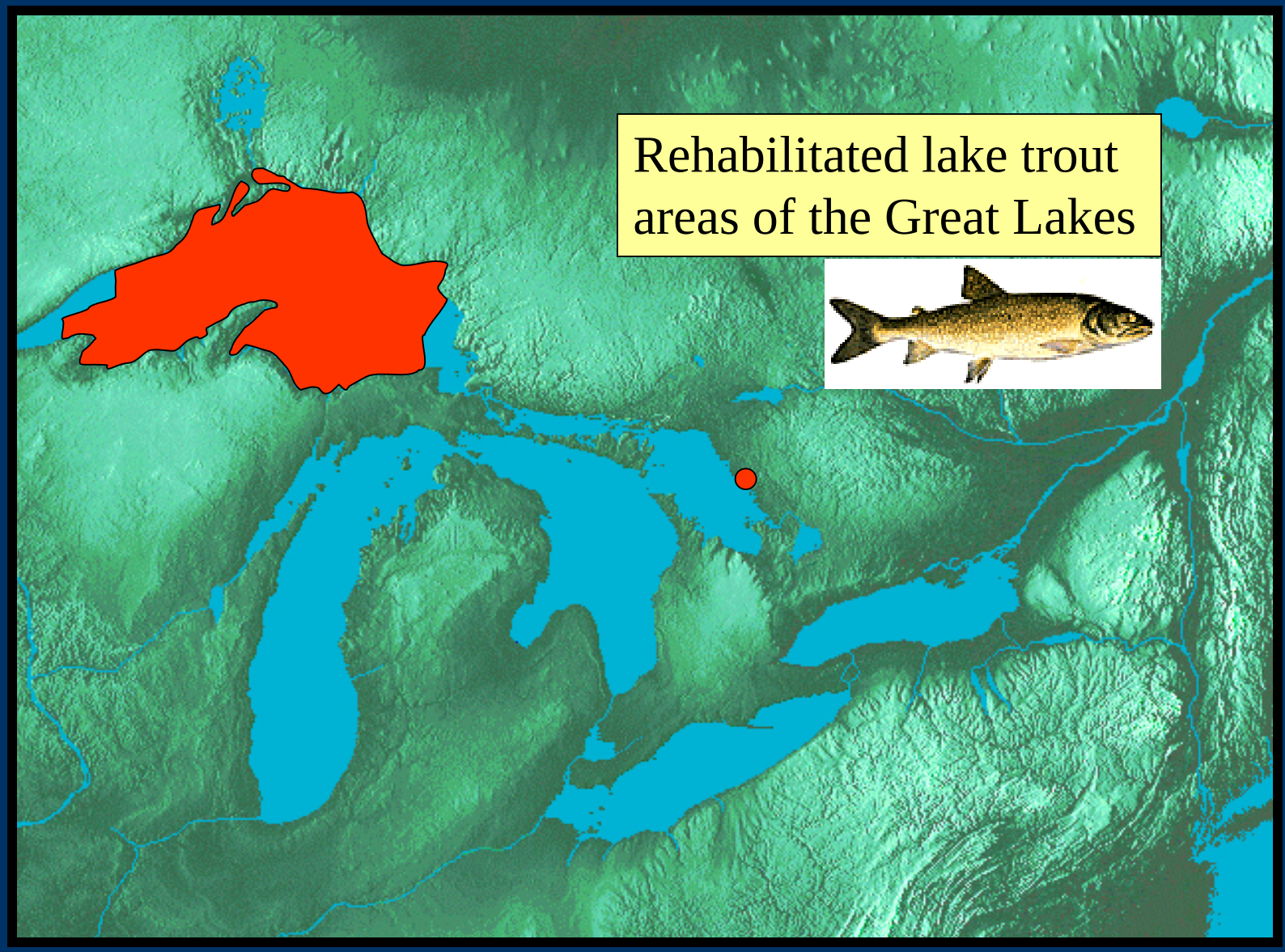
Michigan Dept. of Natural Resources

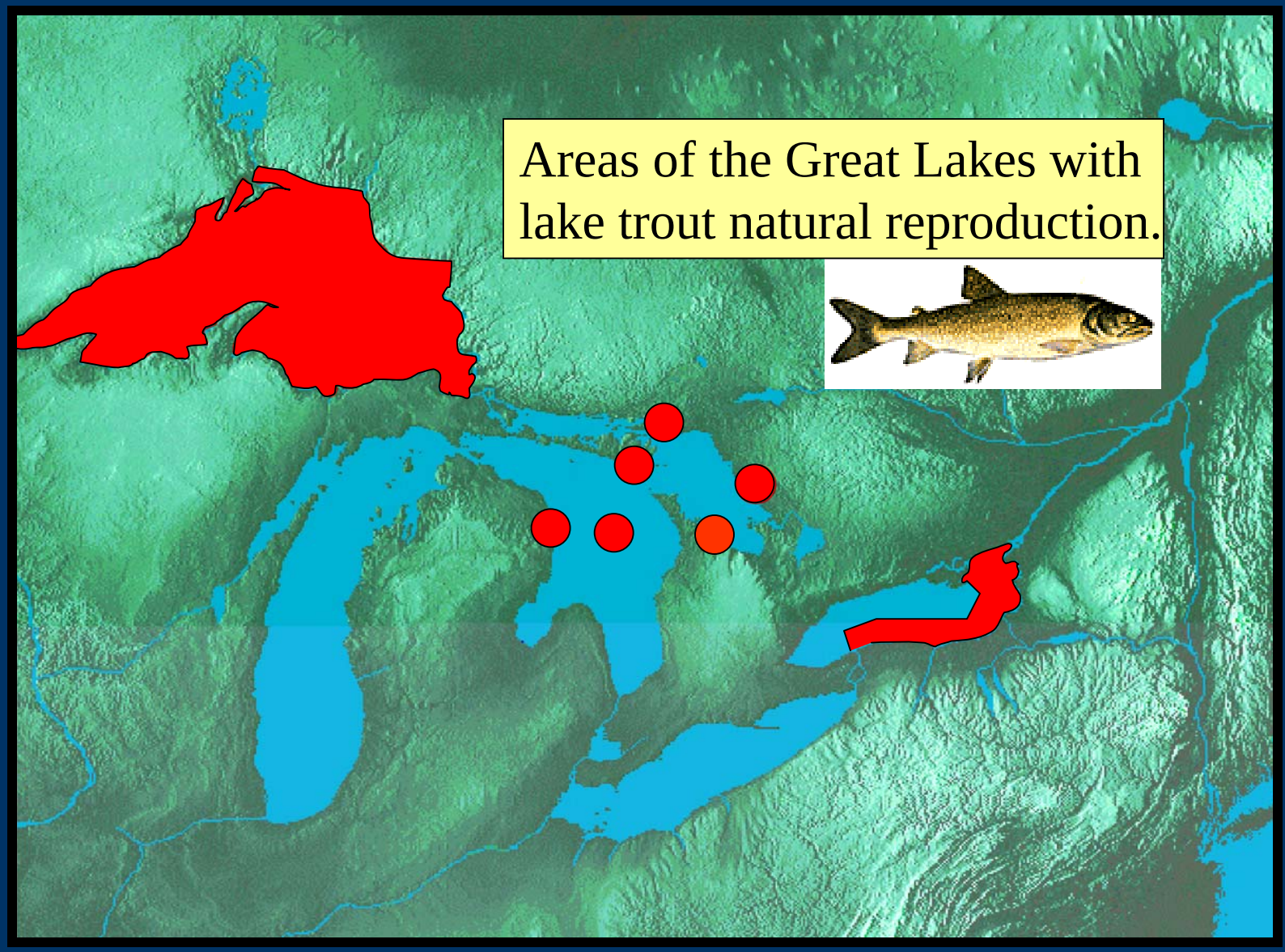
Chippewa-Ottawa Treaty Fishery Management Authority



MH1 Projection Scenarios



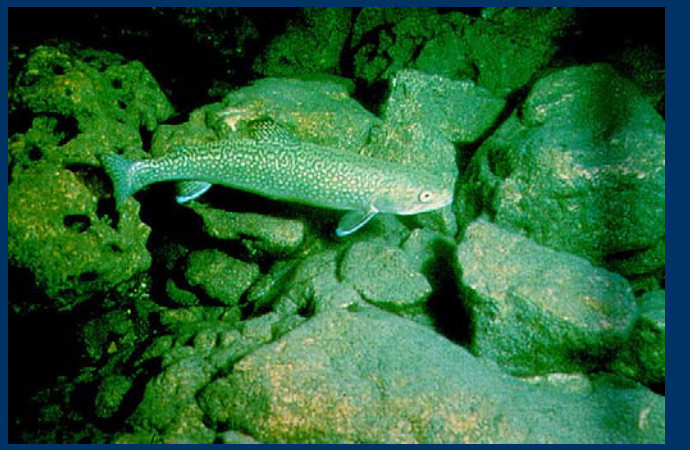

Rehabilitated lake trout areas of the Great Lakes


Areas of the Great Lakes with lake trout natural reproduction.

Why Lake Trout ?

- Original keystone predator in the ecology of Lake Huron (native)
- Food requirements varied resulting in stable populations
- Remains in lake basins where stocked
- Potentially self-sustaining
- Provides economic returns for both the commercial and sport fisheries.
- Best suited as the dominant predator (adapted)

Recommendations:



1. Significant reductions in mortality:
    - lamprey induced - continued diligent control & monitoring.
    - commercial - significantly reduce incidental catch.
    - sport - low bag limits (e.g. 1),
        - size limits,
        - short harvest seasons.

2. Increased use of refuge areas (commercial & sport).

3. Use of higher stocking rates (> 4 yearlings/ha).

Recommendations continued:

4. Studies needed to assess other limiting factors:
    - Early mortality syndrome
    - Predation (including exotics)
    - Other potential bottlenecks

5. Better assessment of status of stocks by rehabilitation zone.

6. Cessation of stocking when reproduction meets rehabilitation guide criteria.